Essays on executive remuneration contracting

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Managerial Power, Corporate Payout, and Gender Discrimination

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To my Family / Für meine Familie

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Chapter 1

Introduction

1.1 Introduction

'There are two common explanations for why the pay of senior executives in big companies has increased so fast in the past few decades: globalisation (the market for top talent has become international) and technological change (it is easier for companies to exploit opportunities, wherever they arise). A more cynical explanation is that senior executives have their pay set by their peers, who therefore have a strong incentive to aim high in the hope that the favour will be returned at some point.' (The Economist, 2nd April 2012)

1.1.1 Introduction

Executive remuneration is indeed a controversial topic that is widely debated in scientific research, the corporate world, and the popular press, alike. Typically, the topic eyeballed in the context of executive remuneration is the exceptional growth in the level of executive pay witnessed over the last decades. And as implied from the above quote, the question that is really asked is whether executive remuneration does not simply represent the skimming of corporate profits by management. The 'skimming theory' is a compelling idea that has attracted considerable interest among academics, but though being arguably simple, is hard to prove. As with many things, the devil is in the details: to determine whether a specific pay package is too high, one has to consider not only the level, but also the mix of pay, the pay-for-performance sensitivity, as well as the performance relative to the company's peers. But it does not stop there. Can we simply assume that remuneration contracting incentivizes management to act in the best interest of the shareholders? How does taxation interact with the process of remuneration contracting? And do we still find gender-based discrimination in terms of pay in the workplace?

1.1.2 Anchor Points

A large bulk of the relevant literature has aimed to answer the question whether executive remuneration helps to align the interests of shareholders and management. Getting down to the 'nitty-gritty' of executive remuneration contracting involves a thorough understanding of the

different compensation components, their associated incentives, the applicable reporting and accounting standards, as well as the relevant taxation regulations. In the presence of wide differences in governance rules, remuneration contracting varies substantially across nations.

A recent strand of the literature focuses more on the relation between executive pay and corporate payout. Interestingly, the tendency away from dividends and towards a combination of both share repurchases and dividends, may correspond to the large increase in the equity-based components of pay. In other words, does equity-based pay really lead to incentive alignment concerning the corporate payout decision? What is the role of taxation regulations concerning the disappearance of dividends?

A new strand of the literature concentrates on the gender wage gap. The UK, for example, has a long tradition of promoting female participation in the workplace. Nevertheless, according to the Gender Gap Index issued by the World Economic Forum, there are 14 countries with a lower gender wage gap than the UK. Similarly, while according to a study issued by the Chartered Management Institute, wage equality at the junior level has been achieved; the question remains whether corporations discriminate against women in top corporate jobs.

The purpose of this dissertation is to shed more light on the process of remuneration contracting and to focus particularly on managerial power, corporate payout, and gender discrimination. It consists of four studies.

1.2 Chapter Overview

In chapter 2, titled “Managerial Compensation: Agency Solution or Problem”, I ask whether executive remuneration is effective in stimulating rational managerial decision-making that focuses on creating shareholder value while simultaneously preventing excessive rent extraction by executives. I contrast the classical perspective on managerial compensation and the managerial power model on the four main components of remuneration contracting. I document the various components of pay, recent trends in executive compensation, the impact of compensation consultants on the pay-setting process and detail differences in national governance standards. An in-depth review of the literature suggests that while executive remuneration seems to be efficient in many cases, there is an abundance of cases in which compensation contracts are not effective. I propose actions for the further development of

governance standards, e.g. an increased disclosure of executive pay, longer vesting periods for stock options, and a cap on severance pay.

In chapter 3 titled "Executive Remuneration and the Payout Decision", I investigate how equity-based compensation of CEOs influences the payout decisions of their firms. I ask whether CEOs with high managerial ownership prefer share repurchases to dividends (or no payout to payout). My empirical analysis provides some interesting results: First, I observe a negative relation between stock options and both total payout and dividend payout of a firm. Second, I find that stock options are positively related to the decision to engage in share repurchases. Overall, these findings suggest that the equity-based components of CEO compensation are linked to a lower payout and a switch from dividends to share repurchases – a result consistent with the managerial power argument.

In chapter 4 titled "Do Tax Advantages Lead to Dividend Replacement? ", I investigate whether taxes are the main driver behind a corporation's payout decision. I analyze in detail the effect of tax regulations on dividends and share repurchases for individual investors, corporations, and pension funds over the last 25 years. The empirical results from a multinomial logit model reveal that the effect of changes in taxation rules on the actual payout decision is limited. Using a dynamic probit model, however, I am able to show that taxes affect firms' switching behavior between the different payout channels. Whereas the literature typically finds no tax-related effects on corporate payout, the results shed some new light on the relation between taxes and the payout channel choice.

In chapter 5 of my dissertation titled "Are Female Top Managers Really Paid Less? ", I examine whether UK corporations discriminate against women in top corporate jobs. I construct a matched sample based on variables such as education, experience, age, firm size and other characteristics. Subsequently, I perform treatment effect estimations as well as Tobit regressions on various components of pay. I find empirical evidence for existing gender pay gaps in multiple pay components. I show that executive remuneration is less performance-dependent for female than for male managers, but that pay-for-performance sensitivity is higher for female CEOs than for male CEOs. The gender pay gap appears to be larger at the executive director level rather than at the CEO level. This latter finding is particularly interesting as it contributes to the scarce literature on gender differences at the top corporate level.

Chapter 2

Managerial Compensation: Agency Solution or Problem?*

2.1 Introduction

Considering the academic research and the comments on managerial compensation in the popular press, the idea that managerial remuneration is an equitable instrument to provide the right incentives to managers is controversial, to say the least. In a number of well-documented cases, including Mattel's Jill Barad and Railtrack's Gerald Corbett, executives were 'rewarded for failure' with excessive pay packages.[1] Jill Barad left Mattel in the middle of financial losses and still received $50m. Gerald Corbett was offered a payment of £1.3m ($1.9m) and a yearly pension of up to £20,000 ($29,000) when he left the company after two fatal rail crashes, the disclosure of a funding gap of £3.6bn ($5.24bn), and a collapse in the company's share price. It is also doubtful whether the total amount of $165m in bonuses paid by AIG can be well justified in the light of the fact that the firm had just been saved from bankruptcy with the aid of $173bn of government funds.[2] In the wake of the financial crisis, executive pay has turned into a thorny issue for executives: shareholders rejected bonuses and compensation plans at Bellway PLC, Provident Financial PLC, Royal Bank of Scotland and Royal Dutch Shell.[3]

In this paper, we contrast the classical perspective on executive compensation with the more recent idea of managerial self-dealing. Both have their roots in principal-agent theory. Under the classical perspective, executive remuneration is an efficient market-based mechanism for aligning the incentives of the agent with the interests of the principal. From this point of view, compensation contracting is the outcome of a bilateral monopoly in demand and supply that induces a power play by the CEO. In contrast, the literature on managerial self-dealing regards remuneration not only as a potential remedy for the principal-agent problem,

* Published as 'Geiler, P. and L. Renneboog, 2011. "Managerial Compensation: Agency Solution or Problem?", Journal of Corporate Law Studies, II(I), 99- 138.'

[1] M Skapinker, "The rewards for failure: Big pay-offs to executives have irritated shareholders", *Financial Times*, 29 June 2001, 21.

[2] C Caldwell, "Not populism but opposition", *Financial Times*, 21 March 2009, 7.

[3] G Chazan and JS Lublin, "Shell Investors Revolt Over Executive Pay Plan", *Wall Street Journal*, 20 May 2009, B1; J Donovan, "Executive pay at Royal Dutch Shell: Muck, brass and spleen", *The Economist*, 21 May 2009.

but also as part of the problem itself. The underlying theory of the self-serving perspective is that executives have captured the board and influence their own pay. We ask whether compensation contracts are efficient in resolving the agency problems of shareholders and managers, or whether they promote managerial self-dealing and the skimming of profits. Therefore, we investigate the four main themes of the executive remuneration literature: the level and mix of pay, pay-for-performance sensitivity, relative performance evaluation, and severance pay. In the context of the first theme, we will not only detail the various components of pay but also put the level and composition of pay in the perspective of international pay practices, and discuss the differences in national governance codes, before we discuss the role of compensation consultants in the pay-setting process.

A review of the empirical research on executive compensation suggests that the current use of remuneration contracts does not decrease agency problems but rather amplifies them. We make a number of policy suggestions to induce more disclosure in remuneration contracting, to strengthen corporate governance, and to avoid excesses.

The remainder of this paper is organized as follows: Section 2 dwells on the theoretical motivations for the use of efficient compensation contracts, thereby mainly focusing on the principal-agent theory. Section 3 discusses why compensation contracts can fail to establish a match between executive pay and shareholder value creation. In section 4, we examine how each of the theoretical perspectives behind the two strands of literature (efficient contracting vs. skimming theory) affects each of the four main themes in the compensation literature: (i) the level and mix of executive remuneration, (ii) the pay-for-performance sensitivity, (iii) relative performance evaluation, and (iv) severance pay. In section 5, we provide a conclusion and advance salient policy recommendations as well as suggestions for further research.

2.2 Why Create Performance-Related Managerial Remuneration Contracts?

Corporate governance deals with the question of how to ensure that investors receive a fair return on their investment after meeting a range of boundary conditions (such as equitable pay for employees, long-term customer and supplier relations, compliance with regulation etc.). One of the solutions to this fundamental question is an (unavoidably) incomplete contract, which is set up to better align the interests of shareholders and executives. Such a contract typically includes share ownership, compensation, and the threat of dismissal, and

leaves the executive with some residual decision rights, i.e., the right to make decisions in the absence of a predefined rule. Corporate decisions induced by managerial self-interest should be discouraged by corporate governance mechanisms, which should instead incentivize managers to pursue actions that are beneficial to shareholders/stakeholders (Daily, Dalton, and Canella, 2003). The principal-agent model claims that effective remuneration contracts are an important corporate governance mechanism.

2.3 The Principal-Agent Perspective

Despite its limitations, the principal-agent framework has long been the dominant framework to analyze corporate governance problems in general and executive compensation problems in particular (Bruce, Buck, and Main, 2005). The separation of ownership and control is at the heart of the agency problem (Jensen and Meckling, 1976). In this framework, shareholders are the principals (owners) and top managers are the agents (control). Shareholders need the expertise of the managers to generate the returns on their investments. The agent and the principals have diverging interests: while they aim at maximizing their own utilities, they induce agency problems. The question is then how to ensure self-interested managers maximize the wealth of the shareholders.

Advocates propose various governance mechanisms to protect shareholder interests including increased shareholder monitoring and enhanced interest alignment. Close shareholder monitoring may encourage managers to act in the best interest of shareholders. However, monitoring is costly for the principal and will only generate a sufficient payoff if the shareholder has a large enough stake to reduce the free-riding problem of small (atomistic) shareholders. Firms can achieve interest alignment in various ways but one of the more obvious methods is to fine-tune executive compensation schemes. The practical importance of corporate governance becomes evident in the pay-setting process, when the board of directors bargains with the managers on behalf of the shareholders. To align incentives, executive pay should be related to corporate performance: the pay-for-performance sensitivity (PPS) is the key metric of the pay-setting process (Bruce et al., 2005). Firms can adjust PPS by means of an annual bonus on top of an executive's base salary or by stock ownership targets - induced by option plans or long-term incentive plans requiring executive directors to hold a minimum number of stocks. Demsetz and Lehn (1985: 1156) claim that: 'The more concentrated is

ownership, the greater the degree to which benefits and costs are borne by the same owner'. Consistently with the idea that such mechanisms ameliorate agency problems, Core and Larcker (2002) find that the adoption by firms of ownership targets is followed by a rise in stock price.

While it seems to be a popular belief that executive compensation should be linked with company performance, it is not obvious that a PPS scheme furthers the corporations' stated goals. A number of studies show that firm value does not increase with the introduction of an incentive-based compensation scheme for executives: for instance, Core, Holthausen, and Larcker(1999) suggest that compensation is negatively associated with firm performance. Brick, Palmon and Wald (2006) show that there is a negative relation between excess director compensation and firm performance. Lastly, Duffhues and Kabir (2008) also fail to detect a positive pay-for-performance relation.

A reduction of agency costs may also occur as a consequence of a range of different types of shareholder activism such as proxy proposals (Renneboog and Szilagyi, 2008, Cziraki, Renneboog, and Szilagyi, 2009), pressure on management by shareholder coalitions (Becht, Franks, Mayer, and Rossi, 2009), and the threat of top management turnover as a consequence of a disciplinary takeover (Franks, Mayer, and Renneboog, 2001). These mechanisms act jointly towards establishing a rational intention for managers to build-up shareholder value and preventing the excessive extraction of funds by executives. Remaining divergences between shareholders and managers that are not corrected by governance devices will result in a 'residual loss' that contributes, along with monitoring costs, to the total agency costs.

The principal-agent framework is sometimes accused of hindering legal and academic thinking by assuming that the only issue to be taken into account is the relationship between principals and agents and that creating shareholder value will solve all problems (Clarke, 2007). Critics of agency theory have proposed several alternative theories, none of which is free of flaws either.[4]

[4] Amongst these are the stewardship and the stakeholder theory: Stewardship theory describes situations in which the objectives of shareholders are aligned with the interests of managers, who maximize their own utility by working towards collectivistic and organizational goals. According to the theory, a steward-executive should be empowered – a process that is often scrutinized by opponents and criticized as limited practical applicability. For further details see: JH Davis, FD Schoorman and J Donaldson, 'Toward a stewardship theory of management' (1997) 22 *Academy of Management Review* 20-47; Stakeholder theory broadens the shareholder perspective towards a stakeholder one, which includes creditors, employees, customers, local communities, the environment, and so forth. The idea of the stakeholder theory is that managers cater to the needs of various stakeholders of the

For example the idea that the competition for scarce managerial talent may drive up the prices for CEOs: In other words, both the level and performance-dependency of both incentive and total pay are in line with optimal contracting (Edmans, Gabaix and Landier, 2009). The authors, assuming no inefficiencies in reality, acknowledge that other components of pay may be more suspicious. Also, Bizjak, Lemmon and Naveen (2008) advance the view that competitive benchmarking is an efficient way to determine the reservation wage of a CEO. Along the same line, Gabaix and Landier (2008) suggest that the increase in US CEO pay can be fully attributed to the rise in market capitalization of US corporations over the same period in time. In a more recent paper, Gabaix and Landier (2011) investigate the impact of agency problems on talent assignment and find that the process may be distorted with firms hiring less talented CEOs and paying them highly. Engesaeth (2011) presents insights on real-life remuneration decisions from a practical perspective.

2.4 Can and Does Managerial Compensation Contracting Work?

The following example from the popular press casts doubt on the effectiveness of executive compensation policies in practice:

"…no matter what hare-brained ideas politicians come up with to curb controversial pay packets, bright minds in finance will find a way round them or exit the regulated part of the industry."[5]

The continuing remuneration scandals, in which executives are rewarded for poor decision-making or risk management and for poor corporate performance, as well as the inability of politicians and lawmakers to restrain the bonus culture, have convinced many of the fact that remuneration induces agency problems rather than solves them. Accordingly, several mechanisms have been developed with the aim of preventing executives from extracting excessive funds from their firms, but also of keeping executives incentivized to increase shareholder value. The academic literature examines the effect of these governance mechanisms: To begin with, Cheffins and Thomas (2001) suggest that bolstering the role of shareholders in an executive pay setting may be of limited use. Conyon and Peck (1998) even

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firm to maintain their managerial position. Critics argue that the failure to provide a decision rule to balance out the various interests of the different stakeholders is a major shortcoming of the theory. For further details, see: RK Mitchell, BR Agle and DJ Wood, 'Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts' (1997) 22 *Academy of Management Review* 853-886.

[5] Lex Column, "War on greed", Financial Times, 23 September 2008, 16.

suggest that the presence of remuneration committees may be associated with higher levels of executive pay, but Gordon (2005) recommends strengthening remuneration committee independence as a possible remedy. Moreover, Renneboog and Trojanowski (2005) find that firms make use of disciplinary turnovers in case of corporate underperformance. Separating the roles of CEO and chairman may make it even easier to remove poorly performing managers (Adams and Ferreira, 2005, Faleye, 2007, Goyal and Park, 2005).

Even with these governance mechanisms in place, the management may be able to extract rents from the corporation, possibly through the channel of executive compensation. For instance, the directors who belong to the remuneration committee may have a personal relationship with the CEO or otherwise be dependent on him, and therefore be reluctant to critically question the level and mix of CEO compensation (Bhagat and Black, 1999). While the literature typically only focuses on CEO pay and/or the entire board, empirical results on the impact of the layer below top management is scarce (Engesaeth, 2011).

2.4.1 Managerial Power and Skimming

The self-serving perspective of management, sometimes called the 'managerial power problem' (Bebchuk and Fried, 1999) or the 'skimming theory' (Bertrand and Mullainathan, 2001), proposes that executive directors extract funds for their own benefit. In this setting, managers influence the terms of their compensation contracts for reasons of self-dealing. For instance, managers can choose performance benchmarks related to accounting measures they can manipulate (over the short run). This imposes substantial costs on shareholders by diluting and distorting the incentives of managers (Bebchuk and Fried, 1999). The practice of hidden rent extraction implies that managers may have a preference for compensation arrangements that enable them to extract funds from the shareholders in such a way that these compensation agreements can be camouflaged as optimal contracting. Bebchuk and Fried (2003: 76) emphasize the importance of strict disclosure regulation: 'the transparency and salience of disclosure can have a significant effect on CEO compensation.'

Managerial power related to excessive rent extraction is curbed by outrage costs, which are related to reputational harm to the firm and the loss of support from shareholders. Bebchuk, Fried, and Walker (2002: 788) state: 'outrage costs depend on the extent to which the rent extraction can be easily and distinctly identified.'

An example of perquisite consumption by CEOs in major companies is the personal use of company aircraft (Yermack, 2006). Shareholders (and the market) penalize firms when such managerial fringe benefits are disclosed. When personal aircraft use by CEOs is first disclosed to shareholders, company stock prices drop by about 1.1 per cent. Furthermore, firms permitting CEO aircraft use underperform market benchmarks by about 400 basis points per year, which constitutes a severe shortfall beyond the costs of the resources consumed. Particularly strong associations appear to exist between personal aircraft use and a CEO's golfing activity. Indeed, after the aircraft perk is first disclosed, firms release greater rates of bad news to shareholders in the form of write-offs and negative earnings surprises. These patterns are consistent with the hypothesis of strategic disclosure behavior whereby managers minimize the bad news flowing to the market until after they have secured access to desirable fringe benefits. Various other empirical findings suggest that the self-dealing of executives is a real problem. For instance, Yermack (1997) finds that managers receive stock option grants shortly before good news announcements and delay such grants until after bad news announcements. The market is concerned that the agency costs in such firms far exceed the direct costs of all the managerial perks.

2.4.2 Say-on-pay Provisions

Over the past few years, say-on-pay provisions have been introduced in the corporate governance codes of several countries such as the UK, Australia, and the Netherlands.[6] With this provision, shareholders have a say on the compensation package of their executives, which may help to restrict excessive pay packages. Earlier this year, a majority of the voting shareholders of Royal Dutch Shell rejected the executive pay package for 2008. Despite this opposing advisory vote, the company decided to pay and 'promised to consult shareholders more closely' in the future.[7] Even though the say on pay provisions are not binding, they put significant moral pressure on the management not to ignore the shareholders' views. Ferri and Maber (2012) examine the effects of the introduction of the say-on-pay rule on executive remuneration in the UK in 2002. While they document no change on the level and growth of

[6] These votes are, however, non-binding in the case of both the UK and Australia. Sources: UK: Combined Code (2008), Australia: Corporate Governance Principles and Recommendations (2007), Netherlands: Dutch Corporate Governance Code (2008).

[7] "Regulating executive pay in America: Knotting the purse-strings", *The Economist*, August 6, 2009.

CEO pay, they find evidence consistent with a higher PPS for poor company performance, particularly for firms with excessive compensation in the period prior to the introduction of the provision. Ferri and Maber (2012) interpret this as evidence supporting a reduction in CEO rewards in case of failure.

2.5 The Four Core Themes of the Compensation Literature

We contrast the classical perspective on executive pay with the idea of managerial self-dealing. The collective literature on executive compensation can be classified into four general themes: (i) The level and mix of executive compensation, which has received by far the strongest media coverage. In order to benchmark (excessive) compensation, we provide an international comparison of pay practices and governance codes. We also discuss briefly the impact of compensation consultants on the efficiency of the pay-setting process. (ii) The relationship between executive pay and firm performance. (iii) The measurement of corporate performance and the determination of performance benchmarks. (iv) Severance pay and golden parachutes following forced CEO turnover. In the light of these four themes, we investigate whether executive compensation is indeed the result of efficient contracting, or rather of skimming of funds by executives.

2.5.1 Theme I: Level and Mix of Executive Compensation

This section on the level and mix of executive compensation serves as a primer on executive remuneration contracts and details the different components of pay. Compensation packages consist of base salary, annual bonus, stocks (long-term incentive plans) and stock options, insurance premiums, pension benefits, as well as severance pay. In the pay-setting process, the level and mix of executive remuneration are important instruments to create incentives as well as to align shareholders' and executives' interests. When talking about the mere level of pay, it is important also to take into consideration the associated level of risk. While companies typically use the ratio of variable pay over total compensation for this purpose, Engesaeth (2011: 6) proposes a compensation risk index (CompRisk index) to measure 'the variability of each unit of expected reward' in a single yardstick.

Table 2-1 compares the average CEO compensation packages in the US and the UK. A first marked difference is that the total compensation in the US is much larger than that of the

UK (and the rest of Europe). This difference is mainly attributed to substantially greater use of equity-based compensation in the US. Table 2-2 exhibits an example of a particularly valuable compensation package awarded to a CEO, who was the highest paid of all British utilities in 2007. He received a fixed salary of around $2,443,692 (entirely paid in cash), a total bonus of $3,973,574 (partially paid in shares), and equity compensation of about $26,705,000 from a long-term incentive plan and a deferred bonus scheme (based on grant value). With the increase of the value of his defined benefit pension scheme and the additional payments for insurances and benefits, he had received a total of about $36,304,000. While an annual income of this size is exceptional for a European manager of a listed commercial or industrial firm, compensation packages of this size are not uncommon in the US. Furthermore, managers of investment funds, financial institutions, and hedge funds often earn many times the value of the above reported compensation package.

[Insert Tables 2-1 and 2-2 about here]

Short-term Components of Pay

Short-term compensation includes fixed salary and a bonus plan based on the performance of the previous year. The fixed salary is set by the compensation committee (a subset of the board of directors), who considers the specific tasks and challenges of the top manager, his (or her) seniority and experience, and the salary earned by (industry-)peers. Since the early 1990s, as Conyon and Murphy (2000) note, the short-term component of pay accounts for a steadily declining percentage of total pay.

The determination of an executive's annual bonus follows a similar procedure to the one outlined above. Annual bonuses are based on three determinants: performance measures, performance benchmarks, and the structure of the pay-for-performance relation. According to the Annual Incentive Plan Design Survey (Towers Perrin, 2005), the vast majority of companies rely in their performance assessment on two or more performance measures using criteria such as sales or revenues, earnings per share and operating income. Whereas revenue tops the list of the most frequently used criteria in the US, the corresponding performance measure in the UK is net profit per share. The bonus can either be calculated by aggregating the outcomes ('additive approach'), or, less usual, by multiplying the measures for different

subcategories ('multiplicative approach'). While under the first approach, the associated awards to multiple performance measures are added up; under the second approach, a bonus calculated on e.g. sales growth is multiplied with a performance factor based on e.g. earnings per share to calculate a final award. As financial performance measures are often criticised for their backward-looking approach and ease of manipulation, other non-financial measures (such as operational or strategic performance targets, quality improvements, and scorecard-based systems) may also be taken into account. Negative as well as positive bonuses, or spreading bonus payments over several years are some ideas advanced to reduce the possible excessive extraction of funds through bonuses.

Long-term Managerial Remuneration.

This section on long-term compensation presents the various long-term pay components, the pros and cons of options and long-term incentive pay, and the reasons for the popularity of equity-based pay.

Components of Long-term Remuneration

The traditional perspective on executive compensation suggests that contracts ought to incentivize executives over the long run. Long-term components of pay designed to serve this purpose include stock options, restricted stock, and long-term-incentive plans. Stock options have been an important part of executive pay since the 1950s, but since the 1990s they have accounted for an increasingly larger part of executive pay (Frydman and Saks, 2012). The basic idea behind option granting is to encourage managers to undertake riskier investments that increase shareholder wealth. The options are usually issued at the money, meaning that the exercise price equals the current market price. The maturity of top executives' options is most frequently set at ten years. Typically, such an option becomes vested (exercisable) after three years. However, in case of a change in control, accelerated vesting may become possible. Accelerated vesting can also be applied as a form of severance pay from a principal-agent perspective.

In the UK (and only rarely in the US), performance-vested options can be forfeited unless a performance 'trigger' is hit. That is, executives cannot exercise their options unless a certain performance threshold, e.g. of the stock price, is met. As for purchase options, the

manager pays a fraction of the strike price when options are granted and has to pay the remainder (of the grant strike price) when exercising the option. Executives who fail to exercise the option lose the pre-paid fraction of the strike-price. In case of reload options, officers receive an additional option for each option that they exercise and for which they pay with shares that they already own.[8] This additional option has the same expiration date as the original option and a strike price equal to the current market price. The officer can thus realize the gain from the option, while staying incentivized until the expiration date of the original option. In calculating the value of option grants, firms normally use the basic Black-Scholes (BS) formula for European options.[9] The use of this formula in the context of management options bears several limitations: (1) it assumes that the option can only be exercised at the expiration date, (2) it assumes no restrictions on short-selling, while in practice, executives are not allowed to trade or sell their options freely, and (3) executives forfeit options when they leave the firm. These aspects reduce the cost associated with granting the option and overstate the BS option value. As a result, the value of an executive stock option is less than that of a standardized financial option with the same underlying value, exercise price, volatility, and maturity. Moreover, risk-averse executives demand a premium for accepting risky options rather than safe base pay (Murphy, 1999). This BS formula may be, at best, a measure of the firms' cost of granting an option (Hall and Murphy, 2000).

Compensation packages consisting of a large proportion of stock options create a strong relation between executive pay and firm performance (pay-for-performance) because the payout of an in-the-money option increases dollar-per-dollar with a respective gain in the share price. However, executive stock options have some downsides. First, issuing large amounts of additional stock to grant options can have a dilutive effect.[10] Second, managers holding stock options may engage in riskier investments because an increase in the financial risk of the firm's assets may augment the value of the options. This is due to the fact that higher risk reflects greater uncertainty about the price of the asset. Higher volatility of the share price makes it more likely for a stock to trade higher, which again results in a higher

[8] As an example: An officer exercises 100 options with a strike price of £30 when the current market price is £40. He has to pay for the exercise price of the options with 75 own shares. The officer receives 100 additional options with the same expiration date as the original options and a strike price of £40.

[9] European options are different from American options in that they can only be exercised at the expiration date of the option.

[10] The dilutive effect of options is not relevant in the case of purchasing stock.

theoretical value of the option. Consequently, Jensen and Murphy (1990) suggest that option grants to executives only act as an incentive to create shareholder value if the granting of the options is conditional upon a performance criterion. Third, Bolton, Scheinkman, and Xiong (2006) show that the presence of heterogeneous beliefs by managers and shareholders about the firm value may induce a short-term orientation or myopic outlook among CEOs. In their model, stock prices reflect both the long-run fundamental value of the firm and a short-term speculative component, which reflects (some) investors' overconfidence. Then, in the presence of wide heterogeneity in beliefs, a CEO is (partially) incentivized to undertake inefficient projects to increase the stock price in the short-run. Bolton et al. (2006) claim that this calls for an intervention of the board towards a more long-term orientation. Fourth, options only reward stock-price appreciation and not the total return to shareholders as the total return also includes the dividend yield. Executive options may therefore influence the payout policy of the company (as explained more detailed in paragraph c, Suboptimal corporate policies).

Restricted stock consists of shares that become transferable only after meeting certain conditions or restrictions. Often these conditions simply refer to the passage of time (commonly 3-5 years), though they may also be dependent on performance targets. Usually, executives receive restricted stock as part of their annual bonus compensation, but firms may also choose to pay part of the compensation in stocks under so-called Long-Term Incentive Plans (LTIPs). Under an LTIP, executives are typically awarded shares after a vesting period, when meeting multiple additional requirements. These requirements usually include specific firm performance criteria and the executive remaining in employment throughout the vesting period.

Some companies also offer their managers Supplemental Executive Retirement Plans (SERPs), which are often linked to company performance or tenure in the firm. Typically, the information disclosed in the annual report and accounts is insufficient to calculate the exact value of such plans but the few cases revealing information show that the pension benefits could be substantial.

Executives can also receive substantial amounts of income through a compensation for loss of office (severance pay or golden parachutes), cash recruitment incentives (signing bonus), and relocation expenses. While the value of the severance package an executive receives seems to be proportional to the risk that the firm faces when entering the contract and

in line with the terms offered by similar firms (Rau and Xu, 2009), Huang and Goldman (2010) show that the actual amount paid exceeds the amount stated in the CEO's contract by a few million dollars.

The Case in Favor of Options and Long-Term Incentive Plans

Many good reasons exist to consider managerial stock options as an effective pay component in line with the agency perspective on executive remuneration. First, stock options provide the most direct link between firm performance and executive pay. Therefore, this pay component stimulates managerial effort and encourages executives to make rational shareholder-oriented decisions. Secondly, stock options enable a firm to attract external top managers and keep them motivated to stay with the firm.[11] Third, even though stock options introduce more risk into the managerial remuneration package, they may also lead to an increase in managers' effort incentives relative to compensation not based on performance (Bryan, Hwang, and Lilien, 2000). Moreover, the fact that a large part of the compensation is performance-dependent is often more acceptable to the shareholders than offering high fixed compensation. In addition, in some cases these stock options may not be granted when a CEO decides to change firms.

The Problems with Equity-based Pay

The popular press has repeatedly highlighted cases of misalignment between shareholders and executives' interests by reporting on excessive compensation contracts:

"The ability to cash out large amounts of equity-based compensation has provided executives with powerful incentives to seek short-term stock gains even when doing so involves excessive risk-taking."[12]

"Anger rumbles on after the revelation that American International Group (AIG) paid millions in bonuses to employees at the unit that broke the giant insurer, which required a $173 billion bail-out."[13]

[11] However, risk-averse and undiversified executives may underestimate the value of their stock options because of the risk associated with this pay component. Corporations also may erroneously perceive options as 'cheap' when relying on the Black-Scholes formula to calculate the 'opportunity-cost' of an option, see: Murphy (2002).
[12] L Bebchuk and J Fried, 'Equity Compensation for Long-Term Results', *Wall Street Journal*, 16 June 2009.
[13] "Rumbling on. The row over bonuses.", *The Economist*, 23 March 2009.

Such examples question the effectiveness of the currently used remuneration contracts. Moreover, if executive pay is the outcome of an efficient market mechanism, it will be hard to understand why some firms hide the actual amount and composition of the managerial compensation from their shareholders. Nevertheless, consistent with the self-dealing hypotheses and the camouflage argument (see above), hidden compensation comes in various forms, such as excessive perquisites, pension plans, and severance pay agreements (Jensen and Meckling, 1976, Bebchuk and Fried, 2003, Yermack, 2006). Moreover, Kuhnen and Zwiebel (2007) show that this hidden part of compensation increases with the noise in the production process (as proxied in the variation of a firm's industry-adjusted return on assets) and the manager's outside options (as proxied by the strength of the CEO's ties with the firm, his age, and education).

Bertrand and Mullainathan (2001) question the effectiveness of executive pay and argue that compensation contracts are not sufficiently sophisticated as they fail to filter-out payments related to luck. They show that windfall earnings affect CEO pay just as much as earnings that result from managerial decisions. Bertrand and Mullainathan (2000) provide further evidence consistent with this skimming view: the presence of large shareholders moderates the increase in CEO pay and limits self-dealing. In the absence of large shareholders, CEOs seem to be able to capture the board and to determine their own compensation packages, at the expense of corporate profit. In their 1999 study, they show that CEO pay rises especially when the introduction of anti-takeover devices actually reduces the takeover threat to a firm (Bertrand and Mullainathan, 1999). Again, large shareholders seem to be instrumental at preventing excessive rent extractions.

The management's attitude towards risk is influenced by stock option plans: DeFusco, Johnson, and Zorn (1990) demonstrate that option-holding managers are incentivized to undertake risky projects. Rajgopal and Shevlin (2002) as well as Bulan, Sanyal and Yan (2010) confirm that adding stock options to a manager/CEO pay package generally reduces the level of risk-aversion due to down-side protection and up-side potential. However, options-induced changes in managerial risk may also influence bondholder returns: an increase in asset risk can trigger a lower price for corporate bonds in the secondary market. Billett, Mauer and Zhang (2006) show that the negative effect for bondholders is larger in firms where the agency costs are expected to be highest (when CEOs only hold a relatively low fraction of the firm's

shares). Moreover, these negative effects are amplified when managerial power is high and shareholder rights weak.

Option backdating refers to the practice that management chooses the grant-day of an option ex post, namely once they have the benefit of hindsight to identify a day in the past on which the stock price was particularly low. Thus, they can lock in the lowest exercise price, which immediately results in a more valuable option (Lie, 2005). Surprisingly, option backdating can be legal in the US provided that it is acknowledged when it occurs.[14] This practice of backdating options is widespread and systematically applied to executive option grants in the US: Heron and Lie (2007, 2009) estimate that almost 30 per cent of firms manipulated grants to top executives at some point between 1996 and 2005. A recent study even suggests that backdating is more widespread than initially thought: Edelson and Whisenant (2009) were able to identify more than 500 backdaters who had remained undisclosed. Narayanan, Schipani and Seyhun (2006) estimate that the disclosure of option backdating results on average in a seven per cent decrease of the stock price, which corresponds to about US$ 400 million in market value, while the gain to the individuals is only about US$ 500,000 per firm and year.[15]

The repricing of options has occurred in case the options' incentive effect disappears when the stock price drops below the exercise price (an 'underwater option'), two possibilities exist to readjust the lost incentives: (1) options can be surrendered and replaced with new options with an exercise price equal to the current market price, or (2) the terms at which options were awarded can be adjusted. However, the practice of repricing, i.e., resetting the exercise price of options, is widely considered as inappropriate for several reasons. First, options could be protected from general industry and market movements ex ante, i.e., options may be designed so that effects beyond management's control are screened-out (Bebchuk et al., 2002). Secondly, repricing creates an incentive problem. If executives anticipate the repricing of options when the share price collapses or moves downwards, then the option will no longer function as a strong incentive mechanism (Chance, Kumar, and Todd, 2000).

[14] Companies must however inform the shareholders about the practice. The accounting and taxation documents must be properly filled in, and no documents can be falsified. Since the Sarbanes-Oxley Act (SOX) in 2002, option grants must be reported within two days of the grant. An excellent discussion of the requirements can be found on Eric Lie's website at the University of Iowa, available at: http://www.biz.uiowa.edu/faculty/elie/backdating.htm.

[15] See also: JR Ritter, 'Forensic Finance' (2008) 22(3) *Journal of Economic Perspectives* 127-147.

The criticism on the prima facie abuse of stock options to kill off incentives through resetting the options price may be attenuated, as repricing mainly takes place after market downturns. In addition, according to Kalpathy (2009), there are no signs that internal governance problems or conflicts of interest drive the decision to reset option prices. He advances the view that repricing is motivated solely by incentive alignment and retention. Kalpathy (2009) also shows results consistent with the idea that firms use repricing to moderate a CEO's incentives to increase risk. Repricing often follows poor firm-specific performance and is commonly observed in small firms, often in industries where human capital is important (Carter and Lynch, 2001, Kalpathy, 2009). But is option repricing effective in (re)stimulating management to focus on shareholder value? Research indicates that poorly performing firms engaging in repricing activities manage to generate good performance after resetting the exercise price (Chance et al., 2000). However, Bebchuk and Fried suggest that the repricing of stock options is only in the best interest of management and not in that of shareholders because managers benefit (perhaps, unfairly) from large option gains in bull markets and (unjustly) justify option repricing in case of poor stock performance (Bebchuk et al., 2002).

Suboptimal corporate policies may be adopted as a consequence of equity-based compensation. Managers holding stock options may have strong incentives to repurchase shares rather than to payout excess cash as dividends (Renneboog and Trojanowski, 2005). In order to make sure that the payout policy choices are not influenced by the equity-based part of the compensation package, the exercise price of the options could be adjusted in the event of dividend payments. Dividend protection can be accomplished in three ways: automatically decreasing the stock-option exercise price when dividends are paid out, restating stock prices on a pre-dividend basis, or allowing executives to receive accumulated dividends at exercise of the options. This way, management is not incentivized to cut back dividends if this decision is not in the best interest of the shareholders (Weisbenner, 2000, Lambert, Larcker, and Verrecchia, 1991). Arnold and Gillenkirch (2002) provide evidence that in case executive stock option plans are not protected for dividend payments, the level of dividends paid out decreases significantly and the number of share repurchases increases.

The managerial power view on remuneration contracting argues that CEOs effectively raise executive pay by influencing the pay-setting process. Clearly, the outside labor market

may not be willing to satisfy the level of pay in question, if it would for this reason overpay the value of the executive's human capital. However, Fee and Hadlock (2003) show that the market assesses managerial effort, and that executives when changing firms receive option grants and stock awards that more than offset the losses incurred when leaving the old firm.

The arguments in this paragraph, which proponents of equity-based pay employ to defend this type of remuneration are questionable. The reason is that even if top management contributes net value (value over and above their total compensation package) to the shareholders, excessive compensation packages may still be seen as unwarranted extraction of rents.

The Popularity of Equity –based Pay

Stock options (and equity-based pay in general) have become a particularly large component of international executive compensation (see section International Comparison and Governance) and have often been reproached as being an effective means to extract funds from shareholders. In addition to incentive realignment, favorable taxation rules and the accounting treatment of stock options have contributed to their popularity. In the US, the tax treatment depends on the type of option considered. Incentive stock options (ISOs), granted to employees to purchase stock of the company, qualify as statutory stock options. §422(b) of the Internal Revenue Code sets forth strict requirements for incentive stock options, including that the options: (1) are granted pursuant to a plan approved by the shareholders, (2) are granted within ten years of the adoption/approval of this plan (whatever is earlier) and (3) are not exercisable after the expiration of 10 years from the grant date. Moreover, (4) the option price must not be less than the fair market value at the time of the grant, (5) the options are generally only transferable and exercisable by the owner, and (6) the grantee must not own stock possessing more than 10 per cent of the total combined voting power of all classes of stock at the time the options are granted (certain restrictions and exemptions apply here). Additional holding requirements are laid out in §422(c) of the Internal Revenue Code.

For the holder of this 'qualified' incentive stock option, taxation is deferred until the stock is sold. Then, the executive faces capital gains taxes on the gain in stock price since the time of grant, i.e. ISOs are not taxed as compensation to the employee. For the firm, the tax consequences are nil at both the granting date and the date when the stock is sold. To the extent

that the fair market value of stock options exercisable for the first time exceeds $100,000 for any individual in a given calendar year, these options are treated as non-statutory ones.[16] Non-statutory options, i.e., all options that do not qualify as incentive stock options, are commonly referred to as non-qualified stock options (NQSOs). The holder of an NQSO faces tax consequences at two points in time: (1) when the option is exercised and (2) when the stock is sold. At exercise, the holder has to pay income tax on the difference between stock price and exercise price of the option (the company can deduct the corresponding amount as compensation expenses). When the stock is sold, a capital gains tax on the difference between the stock price when the option is sold and the exercise price of the option is due. Hence, the tax burden on NQSOs is higher than for qualified options.

In the UK, options granted to employees and directors are tax-exempt up to a value of £30,000 (US$ 51,609) calculated at the date of the grant, if they belong to a (discretionary) Company Share Option Plan (CSOP).[17] For options that exceed this amount (and are thus not covered under an approved CSOP scheme), gains will be taxed at the income tax level according to the U.K. Income Tax Act 2003, chapter 5 ('Share Options').

A second reason for the popularity of stock options has been (until 2004) the accounting treatment rule FAS123, 'Accounting for Stock-based Compensation'. This regulation did not specifically require U.S. firms to expense options.[18] If the exercise price and the expiration date of an option had been pre-determined, companies only incurred an accounting charge at the grant date equal to the spread between the current stock price and the grant-date exercise price. This implied no accounting charge at fair market value and for premium options.[19] In other words, the accounting treatment for stock options lead to hiding of par of the labor costs of top management. From 2005 onwards, however, these costs had to be

[16] As an example: An officer is granted 20,000 stock options at $10, which vest over 5 years. In any given year, the officer may exercise for the first time in a given year options of the value of $40,000 (20,000 x $10 x 0.2). The options would be treated as qualified options, because the aggregated amount granted at fair value does not exceed $100,000, assuming that the options plan meets the other requirements for ISOs. If the options vest immediately, the fair value of the grant exercisable for the first time in a given year will exceed $100,000. Accordingly, the first $100,000 would qualify as ISOs and the remaining part would be treated as non-qualified stock options.

[17] In discretionary schemes, the company can select the directors it wishes to reward. Participation in a CSOP scheme is not open to people, who own more than 25% of the company.

[18] Expensing stock options refers to the accounting treatment for listed firms, which requires reporting the value of stock options in the profit and loss account.

[19] The exercise price of fair market value (FMV) options equals the grant-date market value. In case of premium options, the exercise price exceeds the FMV. See also: Murphy (1999).

reported and booked. The new relevant accounting treatment FAS123r (effective since 2005) requires that costs resulting from all share-based payment transactions be recognized in the financial statement and establishes fair-value as the measurement objective. In the European context, stock options compensation is treated under IFRS2/IAS 12. IFRS2 distinguishes between share-based payment transactions without a vesting period and those with a vesting period. In the first case, an immediate expense has to be recognized. In the second case, a cumulative charge in the income statement is to be recognized over the vesting period. The corresponding services received by the firm from the management are estimated at the grant-date fair value of the share-based payment.[20]

In the UK, the popularity of restricted stock/LTIPs has increased since the publication of the Greenbury Report on Director's Remuneration. Since the report, firms in the UK adopt performance pay plans that only pay out in the event of good performance as compared to a peer group of competitors (Conyon and Schwalbach, 2000). In the US, LTIPs currently include restricted stock grants that vest over time, and bonus plans over multiple years based on either cumulative performance or rolling-average performance (Conyon and Murphy, 2000).

As executives forfeit their restricted stock when leaving the company, this pay component induces a long-term commitment of the recipients. This possibility of forfeiture leads to a favorable tax and accounting treatment. Under FAS123r, restricted stock in the US is subject to the same accounting treatment as stock options. Non-vested equity shares granted to employees must be measured at their fair value at grant date. In sum, the favourable taxation rules and accounting treatment have contributed considerably to the popularity of equity-based pay.

International Comparison & Governance

Executive pay has become an international issue, discussed not only in scientific journals but also widely in the popular press. In order to apprehend the true magnitude of a pay package, an international comparison of pay practices and governance rules is needed. First, it is important to get an idea of the different remuneration practices by country. We present our

[20] As an example: 10 executive officers are granted a total of 200 share options on 1 January 2010. These options vest in 5 years. The grant date fair value of each option is equal to $20. After the end of each six-month interim reporting period, the company will account for the services received by the management with a corresponding increase in equity of $400 (200 x $20 / 10 periods) per period.

international comparison of level and composition of pay to highlight international benchmarks.

Although some components of the top executive compensation packages have changed in similar ways across countries (e.g., the rise of long-term option grants), some marked differences still exist. Figure 2-1 shows the evolution of average CEO compensation (in April 2005 US$) between 1997 and 2006 for firms with approximately US$ 500 million in sales. The total pay is calculated as the sum of salary, bonus, options/LTIPs and other compensation. Figure 2-1 exhibits the rising CEO compensation levels over time: the highest compensation is found in the US and the lowest in Malaysia. Figure 2-1 also reveals that CEO pay levels have risen significantly. For example, since 1997 CEO pay in some European countries and in the UK, the US, South Africa, and South Korea have risen at a yearly growth rate of eight per cent or higher (in real 2005 US$ terms). For a few countries, mainly in Asia and South America, CEO pay decreased over the same period.

Figure 2-2 illustrates the level and composition of variable pay in CEO compensation. We focus on two pay components: variable bonus and long-term incentives as a percentage of annual basic compensation. The variable bonus includes all payments that are short-term and performance-related. Long-term incentives comprise stock options, restricted stock grants, and other awards. Several striking facts emerge: first, the figures show that the use of long-term compensation is highest in the US and Singapore whereas in India and China, long-term components only account for a small part of variable pay. Second, the reliance on variable bonuses also differs widely across countries. For instance, Germany and South Africa rely heavily on performance-related payments whereas companies in Japan use variable bonuses only to a small extent.

[Insert Figures 2-1 and 2-2 about here]

Figure 2-3 presents a detailed picture of the level and mix of CEO compensation of firms with at least US $500 million in worldwide sales for 26 countries. U.S. CEOs receive the highest total pay with more than twice as much of their compensation arising from stock options relative to the CEOs from other countries. Within Europe, the highest CEO compensation is found in Switzerland, the UK, France, and Germany. Several other countries, including Canada, but also Mexico, Brazil, Singapore, and South Africa belong to the group

with a high CEO pay-level. While Murphy noted in 1999 that stock options were absent in nine of the 24 countries surveyed, stock options in 2005 make-up part of CEO compensation in all but one country.

[Insert Figure 2-3 about here]

Secondly, we consider the national governance codes, which enable us to identify firms not abiding by the rules. But even with established national governance principles and detailed transparency rules for remuneration, significant deviations exist across and within countries. To evaluate national standards, we present an international comparison of governance standards on executive remuneration.

Concerns about the standards of financial reporting and accountability, as well as the controversy over executive pay packages have led to proposals to improve governance standards around the world. An important element in a law/code on corporate governance, which increases transparency and accountability, is the disclosure of managerial remuneration. Whereas total compensation transparency was introduced in the UK following the Greenbury report of 1995, other countries followed more recently (Conyon and Schwalbach, 2000). In Germany, for example, a Corporate Governance Code (The Cromme Code) was introduced in 2002, while Estonia and Bulgaria enacted a code in 2006 and 2007, respectively. In many countries, compliance with those codes is not mandatory: often a distinction is made between non-binding recommendations and the so-called 'comply-or-explain principle.' [21] Under comply-or-explain, firms must declare their degree of conformity with the code and their reasons for deviating from the code. However, this gives firms the opportunity not to reveal the actual level of executive pay. The following example may serve as a point in case: Germany's Corporate Governance Code suggested the disclosure of executive remuneration on an individual basis in its 2002 version and turned it into a comply-or-explain recommendation in its 2003 version. Apparently, firms with a higher average executive remuneration package avoided disclosure (Andres and Theissen, 2008).

[21] See e.g. German Corporate Governance Code (2008).

Even in existing codes, there is still much scope for improvement: The TIAA-CREFF code on remuneration disclosure in the US,[22] for example, relies in its most recent version widely on the comply-or-explain principle.[23] Since the shareholders own the company, they should have the right to be informed about the pay package of the executives who run the company for them. Likewise, they should have the right to express their opinion (e.g. in a general binding vote) on the pay packages of their executives and the board's handling of this important issue. Given the cost of the compensation packages and the role that shareholders can play to verify the incentive mechanisms embedded in compensation packages, further disclosure for all top management, officers, and directors should be made mandatory. This assumes that shareholder oversight and activism is effective, but which may need to be stimulated.

[Insert Table 2-3 about here]

Table 2-3 presents an overview of the regulation and corporate governance standards related to executive remuneration disclosure across countries. The table also summarizes information on the formation and structure of compensation committees, which are in most countries responsible for the setting of executive pay. From Table 2-3, we can infer that disclosure standards vary considerably across countries: The countries can be roughly categorized into three groups according to their implementation of a number of different rules: (1) the disclosure of the level of executive remuneration on an individual basis, (2) the disclosure of the mix of the various pay components, (3) the additional disclosure of perquisites, options, and supplemental executive retirement plans, as well as (4) advanced disclosure regulations concerning specific remuneration reports, a cap on termination payments, and minimum vesting requirements. We consider countries that turned these governance standards into law or that apply at least the 'comply-or-explain principle', as having adopted the relevant disclosure rule.[24] The most strict remuneration disclosure

[22] TIAA-CREF Policy Statement on Corporate Governance (2007). The TIAA-CREFF code is not a national code as it is promulgated institutional investors.

[23] This code is promulgated only by one institutional investor and does therefore not constitute a national corporate governance code.

[24] The 2009 Belgian Code on Corporate Governance describes 'principles' as the pillars of good governance, and 'provisions' as recommendations that describe how to apply the principles. Companies can deviate from the 'provision', but have to explain why they do so. This 'comply-or-explain' principle is recognized by Directive 2006/46/EC.

standards are found in the UK, the US, and a number of European countries, including Belgium, Germany, and the Netherlands. Several countries, including Canada, Japan, Poland, and South Korea, fall short in all the categories mentioned above. Other countries have already adopted some of the disclosure requirements concerning executive pay, but still lack others. Many countries such as the UK, Belgium, France, India, Malaysia, the Netherlands, and Spain have adopted governance guidelines that require the disclosure of executive pay on an individual level, while other countries including Australia, Brazil, Mexico, and Switzerland require only the disclosure of aggregated pay levels. The latter group of countries have yet to include disclosure guidelines regarding the various pay components.

When considering guidelines concerning the establishment of a compensation committee, most of the countries show that they have actually adopted these rules at least following the comply-or-explain principle. A number of countries, however, including Brazil, Mexico, Poland, South Korea, and Germany only mention best practice recommendations concerning the establishment of a compensation committee.[25] Yet, some of these countries have a two-tier board structure with a supervisory board supervising the management board (and, in the case of Germany, workers' representatives on the supervisory board) which may be the reason why these countries do not provide further directions for the independence of compensation committee members. A number of countries, including Belgium, India, Japan, and Spain mention in their corporate governance standards a minimum number of directors on such a committee. Table 2-3 also confirms that the governance codes regarding remuneration disclosure are comparably weak in countries such as Canada, Mexico, Singapore, Sweden, and Switzerland, which still show rather high levels of CEO pay.

We use the comparison of international pay practices and corporate governance guidelines on remuneration to develop a classification of countries based on the degree to which their regulation supports efficient compensation contracting. We argue that high levels of variable pay give firms more leeway to skim profits. Likewise, firms in an environment of limited disclosure requirements run a higher risk of skimming than firms subject to full disclosure requirements. As a consequence, in the continuum of pay practices and national governance standards, some countries encourage the application of efficient compensation whereas others may enable more skimming of funds by top executives. According to our

[25] The 'comply-or-explain' principle does not apply on recommendations.

classification, countries like Brazil, Canada, Singapore, and Switzerland are subject to high risk of skimming due to the high levels of variable pay and comparably weak governance standards, whereas the situation in the Netherlands and the UK rather points at more efficient remuneration contracting.

This section set out to determine an international comparison of pay practices and governance rules. In sum, countries should strive for a certain balance in the continuum of pay practices and national governance standards. The increased use of stock repurchases as CEO pay components calls for an adequate strengthening of the applicable governance rules – the full potential of which may not be achieved with the comply-or-explain principle only.

The Role of Compensation Consultants

While it has been argued that the use of compensation consultants may help to achieve efficient contracting, there are reasons to believe that they may actually support skimming.

Compensation consultants such as Towers Perrin, Watson Wyatt or Hewitt Associates support the board of directors in the pay-setting process with their knowledge about the design of pay packages in the industry and the company's peer group. In particular, they can offer advice and assistance in the design of compensation packages to compensation committees (Bender, 2007). For the UK, Conyon, Peck, and Sadler (2006) show that almost all firms employ some form of compensation consultant. While these consultants promote pay packages to align managerial and shareholder interest, CEO pay (and especially the equity-based component) is higher in firms with more consultants and with consultants that offer various services (Conyon, Peck, and Sadler, 2009, Armstrong, Ittner, and Larcker, 2008). Wade, Porac, and Pollock (1997) find that companies with more concentrated and active outside owners are more likely to justify their pay practices by using the advice of compensation consultants. These findings are consistent with the argument that firms use compensation consultants to camouflage CEO pay and to enable the excessive extraction of funds (Bebchuk and Fried, 2003).

Determining the level of compensation relative to a peer group, a procedure commonly employed by compensation consultants, leads to what is commonly referred to as 'ratcheting-up' of pay. The competition among compensation consultants may drive this effect on CEO

pay, suggesting that this is not in the shareholder's best interest (Minhat, 2008). More importantly, the perception of consultants' knowledge about the design of pay packages in the industry and the company's peer group may also be misleading. In particular, ineffective compensation consultants may spread deficiencies from one client firm to another (Cadman et al., 2008).

2.5.2 Theme II: Pay-for-performance Sensitivity

From the principal-agent perspective on executive remuneration, pay-for-performance sensitivity (PPS) is a key metric for the alignment of shareholders and executives: If there is no meaningful link between CEO pay and company performance, it is doubtful that the trillions of dollars of assets in public corporations are being managed efficiently (Hall and Liebman, 1998).

Pay-for-performance sensitivity is commonly estimated as the extent to which firm performance affects (CEO) compensation – an important requirement for the efficiency of executive pay. In fact, PPS should serve as an 'adjustment screw' in the relationship between the level of remuneration and firm value. This relationship can be measured in several ways: (i) the percentage change in compensation for a one per cent change in firm value ('elasticity of compensation'), (ii) the dollar change of an executive's wealth per dollar change in firm value ('Jensen-Murphy statistic'), or (iii) the dollar change of an executive's wealth per percent change in firm value ('equity at stake').[26]

Table 2-4 summarizes the pay-for performance sensitivities for the main studies. Several stylized facts emerge: First, the overall empirical results show a significant positive pay-for-performance sensitivity: that is, compensation increases when firm value does.[27] Murphy (1985), for example, shows that a 10 per cent rise in the stock price (holding sales constant) leads to an increase in total CEO compensation (consisting of salary, bonus, options and other benefits) of 1.6 per cent and to an increase in cash-based compensation (salary and bonus) of 0.9 per cent (only the cash-based value is shown in the table). The latter number is roughly in line with other estimates in the PPS literature: Conyon and Murphy (2000) and

[26] See Frydman and Saks (2012).

[27] The reason why we do not expect to find a negative pay-for-performance sensitivity is that a manager's income is not going down proportionally with declining corporate profits due to the stock options which either have a positive or a zero payoff and the fact that part of the compensation is fixed.

Coughlan and Schmidt (1985) find an increase of 1.2-1.4 per cent in the UK (and of 2.7 per cent in the US); Hall and Liebman (1998) present an estimate of 0.2 per cent. Gregg, Jewell, and Tonks (2005) include pension contributions into their total compensation measure and arrive at an estimate of 0.6 per cent for the highest paid director, in line with the results of Kaplan. It should be noted that the size of the PPS estimates depend on the firm performance measure used, such as Tobin's Q, return on assets, return on sales, accounting rate of return and the annual stock return (Mehran, 1995, Crespi-Cladera and Gispert-Pellicer, 1998, Bertrand and Mullainathan, 1999, Duffhues and Kabir, 2008).

Importantly, reported PPS estimates rise substantially from the 1980s onwards along with the use of equity-based compensation: the PPS estimates then augment to the 1.6-3.8 per cent range for a corresponding rise in the stock price of 10 per cent (Murphy, 1985, Hall and Liebman, 1998, Bertrand and Mullainathan, 1999). A number of studies also document the dollar increase in CEO pay for a $1,000 dollar increase in firm performance measured by shareholder returns. This type of PPS estimates varies considerably across studies as they depend on the control variables included in the regressions: the estimates lie in the range of $3.25-$14.52 (Jensen and Murphy, 1990, Aggarwal and Samwick, 1998, Rajgopal, Shevlin, and Zamora, 2006).

Garen (1994) shows that riskier firms pay their executives a higher salary but grant them less incentive-based pay. Garvey and Milbourn (2003) confirm that riskier firms tend to have lower pay-for-performance relationships. Aggarwal and Samwick (1998) show that PPS decreases in the variance of a firm's performance, and argue that executives facing risks from personal under-diversification care more about the stock's variance. Accordingly, they estimate a pay-for-performance sensitivity at the median variance of $14.52 per $1,000 in 1999. As this is substantially larger than what other studies report (see Table 2-4), the authors conclude that omitting a firm's variance in the PPS calculation, dramatically understates the average PPS.

[Insert Table 2-4 about here]

Most studies document that the pay-for-performance relationship is positive and hence imply that the remuneration contracts reach their aim at least partially, i.e. provide incentives for executives to increase firm value, in line with the agency perspective on executive pay (Tosi, Werner, Katz, and Gomez-Mejia, 2000). According to Gibbons and Murphy (1992), the

pay-for-performance link is higher for CEOs closer to their retirement, suggesting that the incentives for the managers with the weakest career concerns are optimized.

PPS and governance mechanisms are complementary: strong corporate governance prevents excessive extraction of funds by executive directors and leads to a stronger PPS. For example, Conyon and Peck (1998) show for the UK that when the composition of the board or remuneration committee is changed towards a higher proportion of outside directors, board vigilance and monitoring improves, resulting in a stronger pay-for-performance link. Gregg et al. (2005) come up with a more nuanced picture: they conclude that PPS is strong for relatively high stock returns, but low for relatively low stock returns.

There are nevertheless several caveats concerning PPS. First, the linkage between pay and performance is only one aspect of remuneration contracting. Under the agency perspective, economic value added may well serve as both an adequate measure to assess the excess return to shareholders and an ideal bonus base for executives. This also implies, however, that PPS may not be relevant at all for junior management. Interestingly, the self-serving perspective on executive pay points out that raw corporate size is in fact even more strongly related to total managerial compensation than corporate performance. In other words: managers of bigger firms get bigger pay packages (Jensen and Murphy, 1990, Garen, 1994, Murphy, 1999, Tosi et al., 2000). This finding has been replicated in most countries.[28] Consequently, the performance of a firm only explains part of the variation in executive pay, which somewhat undermines the agency viewpoint on remuneration packages (Bebchuk and Fried, 2002).

Secondly, it is often not known which performance measure is used in a specific case. In fact, the chosen performance measure can vary from company to company and over time. This does not facilitate the investigation of a pay-for-performance relation. A commonly employed way to make an educated guess on the performance measure in question is then to rely on some form of regression approach.[29]

Third, even if the performance measure is known, the question remains as to what is the appropriate benchmark. Firms can, for example, rely on an individually chosen set of peers. And fourth, a range of additional factors may influence pay-for-performance sensitivity:

[28] For instance: see Renneboog and Trojanowski (2002) for the UK, Germany (Franks and Mayer, 2004), Spain (Crespi and Gispert, 1998), Italy (Brunello et al., 2001), and the US (Murphy 1985, 1999).

[29] In such a regression procedure, one attempts to determine a mathematical relationship between executive pay and one or more variables that are assumed to be determinants.

boards can under specific circumstances deviate at their discretion from set performance measures, based on additional information or specific strategies. Notwithstanding these difficulties, the literature has widely focused on stock returns and accounting performance to assess the pay-for-performance for CEOs.

2.5.3 Theme III: Relative Performance Evaluation

Arguably, the simplest method to detect excessive executive remuneration is to check whether pay is out of line with comparable companies. Unfortunately, the relative performance evaluation (RPE) or evaluating the executives' performance against an appropriate benchmark is not straightforward. What is the right benchmark? First, a choice must be made between market-based versus accounting-based performance measures, or some combination of the two. The use of accounting returns in relative performance measurement has the disadvantage that accounting figures are backward looking and short-term. Stock return benchmarks are based on market prices and can be used to directly align the interests of CEOs and shareholder. Nevertheless, both accounting and stock returns can be subject to short-term manipulation by top management.

Second, the relevant market or industry needs to be identified as well as a relevant peer-group of firms. A good performance benchmark should aim to exclude the impact of exogenous shocks beyond the control of management from performance evaluation. The idea is that the evaluation should focus on the manager's leadership qualities and not macro-economic shocks (such as changes in exchange rates) for which he is not responsible. This is the reason why managerial performance is measured relative to the performance of other firms in the same industry or market (Holmstrom, 1982, Antle and Smith, 1986).

The empirical evidence on the existence of RPE is mixed: In line with the principal-agent and the steward/stakeholder perspective on executive pay, Gibbons and Murphy (1992) support the existence of RPE in practice; they show that CEO pay is significantly and positively related to own firm performance. They also document that CEOs are more likely to be evaluated relative to aggregate market movements than relative to industry movements. Murphy (1999) acknowledges the use of RPE in accounting-based bonus plans, but also mentions the apparent absence of RPE in stock-based bonus plans. A number of recent studies generally confirm that firms make use of RPE in determining executive remuneration

(Bannister and Newman, 2003, Garvey and Milbourn, 2003, Carter, Ittner, and Zechman, 2009). All in all, from the classical perspective of executive pay, the empirical academic literature is not able to find strong evidence of RPE. The reason may be that firms (i) use different performance benchmarks, (ii) use combinations of benchmarks, and/or (iii) use different peer groups (Albuquerque, 2005, Carter et al., 2009). Moreover, the choice of the compensation component and the structure of its payoff are relevant. The variations in these proxies across companies and within companies over time make it difficult to infer the (implicit) RPE by regressing executive pay on firm and industry performance. Some studies do find evidence of an explicit use of RPE as performance-vested equity grants are indeed linked to the firms' subsequent achievement of performance targets (Carter et al., 2009). In short, tests based on implicit measures of RPE may very well be at odds with results from studies based on explicit measures. While some firms use RPE, the system is often abused. For instance, Bannister and Newman show that many firms filter out negative performance-related events, but fail to do so for positive events, suggesting a one-sided RPE (Bannister and Newman, 2003). Bertrand and Mullainathan (2000) confirm earnings 'skimming' by managers in that CEOs are rewarded for windfall profits beyond their control in the absence of large monitoring shareholders. Garvey and Milbourn (2003) find some indications of strong relative performance evaluation for those executives facing relatively high cost to eliminate undesirable market exposure. Carter et al. (2009) find that strong external monitoring by blockholders goes hand in hand with the use of RPE. Corporate boards may, however, also fail to fully filter out exogenous shocks because of their usage of rules-of-thumbs: Jenter and Kanaan show that CEOs are significantly more likely to be dismissed after bad industry and bad market performance and suggest that corporate boards may use some rule-of-thumb RPE, which make them only partially filtering exogenous shocks from their assessment of CEO quality (Jenter and Kanaan, 2008). Moreover, these authors suggest that there appears to be more filtering in the case of salient peer performance measures and peer-group underperforming CEOs. All in all, the academic results are mixed: some studies show that firms use RPE but many more fail to do so; others suggest that RPE is employed to filter out undesirable market movements.

2.5.4 Theme IV: CEO Dismissal, Severance Pay, and Golden Parachutes

Another governance mechanism to discipline poorly performing managers is forced turnover, which may help to align shareholders' and executives' interests. In line with the principal-agent, the stewardship and stakeholder perspective on executive remuneration, disciplinary turnover is consistent with efficient contracting. However, in some cases, dismissal does not bring the remuneration flows to a halt, but rather triggers a significant payout to top executives: severance pay. The basic idea behind 'golden parachutes' and severance agreements is to incentivize the maximization of shareholder wealth without any concern for job loss. In this view, separation pay is part of an efficient multi-period incentive contract and could help to control possible damages stemming from a manager departing with slamming doors. Critics argue, however, that severance pay is nothing less than assets leaking out of the firm, as this type of remuneration cannot be related to future performance.

Jensen and Murphy (1990) document that the threat of dismissal does not induce an important managerial incentive. They argue that the increase in the probability of dismissal resulting from poor performance, and the penalties associated with dismissal, are both small. Similarly, Franks et al. (2001) study disciplinary turnover of CEOs in the UK: They show that turnover is concentrated in the lowest decile of performance (measured by abnormal returns) and occurs more frequently when firms are facing accounting losses. This study and several others for the US emphasize the role of large outside shareholders to replace underperforming management (cf: Kang and Shivdasani, 1995, Warner, Watts, and Wruck, 1988). In fact, it seems that boards tend to rely on the firm's stock market performance to make termination decisions. For the UK, there is also evidence that heavily entrenched managers are able to successfully impede any board restructuring, even in the wake of poor performance (Franks et al., 2001). There are mixed results on the impact of executive turnover on corporate performance. Adams and Mansi (2008) find that CEO turnover events have in general an insignificant impact on firm value.[30] In contrast, Höppe and Moers (2011) as well as Huson, Malatesta and Parrino (2004) conclude that investors typically anticipate the performance improvements that result from a CEO turnover decision and such a decision is indeed value enhancing in terms of accounting measures of performance and stock price reactions. Dezsö

[30] Note: Their measure of overall firm value includes various types of CEO turnover (forced vs. Voluntary and inside- vs. Outside firm replacements).

(2007) confirms that once firms can get rid of entrenched CEOs, they experience a large performance increase during the three years following the forced turnover,[31] and provides evidence of a negative relationship between entrenchment and performance in the year prior to turnover, suggesting that these large performance improvements are indeed the result of improved management.

The probability of CEO dismissal may have repercussions on the financial level: more job uncertainty and the stress related to turnover may be priced in the CEOs' compensation packages. According to Yermack (2006), more than half of the CEOs can expect severance payments of on average $5.4 million when leaving a firm, with CEO dismissals generally attracting to larger compensation than voluntary retirements.[32] That severance packages and golden parachutes are granted to dismissed CEOs is one of the most controversial issues of managerial compensation:

"Securities filing by Schering-Plough Corp shows that executives could receive $107.9 million in severance and pension payments if they leave after company is taken over by Merck & Co; disclosures come amid criticism of high executive compensation." [33]

Other well-publicized examples include a severance pay of $210m to Home Depot's Robert Nardelli,[34] $14.4m to HP's Michael Capellas,[35] $11.9m to Pfizer's Hank McKinnell,[36] and $5.1m to Alstom's Pierre Bilger.[37] These examples – amongst many others – question the effectiveness and the level of severance pay.

Still, several theories exist to rationalize severance payments. The ex post settling up theory predicts a lump-sum exit payment for CEOs that have been underpaid during their career – a rather unrealistic assumption. According to the bonding theory, severance payments

[31] Read: A positive relationship between a narrowly defined entrenchment index and post-turnover performance (measured as: operating returns on assets).
[32] Yermack (2006) shows that CEOs who are dismissed are far more likely to obtain separation pay compared to CEOs who retire voluntarily (91% vs. 47%) and their awards are several times larger, with a mean value of $15.1 million (median $6.5 million) compared to a mean of $2.3 (median zero) in cases of normal retirement.
[33] JD Rockoff, "Schering Filing Details Payout - CEO Hassan, Nine Others Could Get $107.9 Million After Merck Takeover", *Wall Street Journal*, 22 May 2009.
[34] F Guerrera, B Simon and A Ward, "Nardelli's turn at Chrysler wheel has a bumpy ride – The ex Home Depot head has a style unlikely to please unions", *Financial Times*, 7 August 2007, 21.
[35] S Morrison, "HP exit deals challenged", *Financial Times*, 5 April 2003, 19.
[36] C Bowe, "McKinnel to leave Pfizer with Dollars 200m in compensation", *Financial Times*, 22 December 2006, 13.
[37] J Johnson, "INTERNATIONAL: Legal move to halt Euros 20m for Messier VIVENDI UNIVERSAL", *Financial Times*, 13 August 2003, 24.

represent the payoffs of explicit or implicit contracts entered into by the firm to provide insurance for the CEOs' human capital value. Severance pay then serves as a bonding device through which shareholders may try 'to assure the CEO of a minimum lifetime wage level,' while also raising the costs of replacing top management (Yermack, 2006: 255). However, Fee and Hadlock (2003) find that golden handcuffs do not appear to be very strong. The security provided by severance pay is expected to induce CEOs to develop long-term value maximizing strategies due to desirable ex ante incentives (Leland and Senbet, 2003, Almazan and Suarez, 2003, Inderst and Mueller, 2005). Moreover, in case of CEO entrenchment, severance pay may make retirement a more attractive option to an under-performing CEO than maintaining his position. The theory of damage control refers to severance pay packages as a means to have the exiting CEO accept 'non-competition, non-disclosure, non-hire, and consulting provisions' (Yermack, 2006: 241). This way, severance pay may also prevent ex-top managers from becoming an adversary of the company in the public press, or from teaming up with competitors and regulatory institutions. Laux (2008) also suggests that it may be necessary to offer generous severance pay to the board, in order 'to induce the CEO to reveal negative information that leads to his own dismissal…'.

One of the few empirical papers that is positive about severance pay is by Narayanan and Sundaram (1998). They advance the view that concerns about the implementation of golden parachutes in executive compensation contracts are misplaced. When investigating operating, financial, and stock price performance, the authors find that firms do not appear to be run poorly by management subsequent to the adoption of golden parachutes. On the contrary, severance packages may provide ex ante incentives for managers to take on a more desirable risk level, as they reduce agency costs related to deviations from the optimal risk level (Ju et al., 2003).

In contrast to Narayan and Sundaram (1998), Dezsö (2007) concludes that firms with classified boards, golden parachutes, or poison pill provisions perform worse than firms without these provisions, and he suggests that manager-friendly entrenchment provisions lead to the insulation of inferior CEOs and ultimately to poorer performance. Indeed, severance agreements also stand for assets leaking out of the firm as their incentive effect is doubtful and this type of pay cannot influence future performance anymore. Accordingly, extravagant severance agreements signal broader governance problems that are often reflected in negative

stock market reactions. Yermack (2006) points out that severance pay may be nothing else than rent extraction, i.e. powerful managers may be able to extract extra compensation from the company beyond the value of their own human capital. All of the above theories that rationalize or criticize golden parachutes have been put to a thorough test in Yermack (2006). There is no empirical evidence to back up the 'ex post settling up' theory, but weak empirical support for the bonding theories in case of forced CEO turnover: CEOs urged to leave receive severance pay proportional to the expected number of years left until retirement. The same argument also supports the damage control theory: A CEO forced to leave may feel somewhat compensated for the loss (of income and reputation) and therefore not become an adversary of the company. Finally, mixed support is unveiled for the rent-extraction theory. Yermack (2006) documents a negative association between the transparency of a CEO's package and the extent to which a severance package is larger than expected. Furthermore, the least transparent packages are awarded to dismissed CEOs whereas in the case of voluntary CEO retirements, there is evidence that the stock market reacts negatively to the disclosure of severance agreements. From this, Yermack tentatively concludes that boards use severance pay to ensure CEOs of a minimum lifetime wage level.

2.6 Conclusion

"Meanwhile, excessive executive compensation — unmoored from long-term performance or even reality — rewarded recklessness rather than responsibility. This wasn't just a failure of individuals. This was a failure of the entire system." [38]

"Unrestrained greed in the financial sector has led to the biggest global recession since world war two. It has now spread across the world and instigated significant slowdowns in the US, Europe [and] China and caused more than 50 banks to collapse and millions of jobs to be lost."[39]

The recent debate on international pay practices has further enhanced academic and practitioner interest, particularly on the extent to which executive compensation is an agency problem rather than a solution. This paper contrasts the classical perspective on managerial

[38] B Obama, '*Remarks by the president on 21st century financial regulatory reform*', http://www.whitehouse.gov/the_press_office/Remarks-of-the-President-on-Regulatory-Reform/; 17 June 2009.
[39] W Swan, 'Productivity Commission and Allan Fels to Examine Executive Remuneration', http://www.treasurer.gov.au/DisplayDocs.aspx?doc=pressreleases/2009/025.htm&pageID=003&min=wms&Year=&DocType; 18 March 2009, (Media release No.025).

compensation and the managerial power or skimming model on the four main themes of remuneration contracting: (1) the level and composition of executive pay, (2) pay-for-performance sensitivity, (3) relative performance evaluation, and (4) severance pay.

The paper documents the various components of pay, as well as recent trends in executive compensation. In particular, we cover the impact of compensation consultants on the pay-setting process, document recent developments in international pay practices, and detail the differences in national governance standards. We also develop a basic classification of countries on the basis of their remuneration contracting efficiency.

The use of equity-based compensation assumes an effective link between performance and executive pay. However, the empirical evidence casts serious doubts on the effectiveness of executive remuneration contracting. In particular, the use of options may be subject to some severe problems. For example, firms overestimate the value of options to executives and erroneously regard options as a 'cheap' form of compensation. Easily applicable mechanisms to filter out general market movements are not or rarely implemented in executive stock options. Other practices such as option repricing kill off the incentive effects and the respective costs are too high to justify this practice. The strong reliance on stock options in compensation contracts is dubious, as one of the reasons seems to be the favorable tax treatment of options. Longer vesting periods, a ban on repricing and backdating of options, making the granting of equity-based compensation dependent on specific performance criteria, and more transparency seem to be a necessity. As for longer vesting periods, we propose to spread out bonus payments over 3-5 years to induce a long-term orientation and more in general, we argue to move away from short-term pay and to delay the payment of bonuses until the full consequences of managerial actions are materialized. To further increase transparency, we recommend the disclosure of all remuneration-related information at the individual director level, particularly those of further components of pay, such as pension contributions, health insurance-, and fringe benefits that are not yet generally made public. In addition, to avoid skimming through the use of (large amounts of) stock options, we recommend increasing the taxation of stock options exceeding specific thresholds. Concerning the work of compensation consultants, we recommend that such compensation consultants do not perform any other consulting work for the company.

A positive pay-for-performance (PPS) relation has been found, but corporate size is still a much stronger determinant of the total pay package. PPS and governance mechanisms are complementary: strong corporate governance prevents excessive extraction of funds by executive directors and leads to a stronger PPS. As the top management is sometimes able to manipulate both accounting and stock based measures, not just the pay-for-performance is important but also the relative performance evaluation (RPE). So, the problem extends to determining valid benchmarks based on the market, the industry, as well as a peer-group. Currently, most firms fail to correct performance for windfall profits (e.g. favorable macro-economic shocks such as exchange rates). One of the most controversial issues of managerial compensation is including severance pay or golden parachutes into a compensation package. Over the past decade – and certainly since the financial crisis that started in 2008 – public outcry frequently emerged when high severance pay was disclosed upon the (forced) departure of a CEO. The few arguments brought forward to support severance pay are to bond the CEO to the firm and to assure him of a lifetime wage level. This assumes that a departing CEO is totally unemployable, which can be easily dismissed by the empirical research. Several governments are considering to adopt a cap on severance pay in the codes of good governance, which is from an academic research perspective entirely justified. In addition, we are in favor of binding shareholder proposals on top-executive pay and suggest to give shareholders a greater say on the overall level of remuneration awarded to top management.

In sum, our review of the empirical results of the relevant literature on executive remuneration suggests that many compensation contracts are not effective, but rather promote managerial self-dealing and the skimming of profits.

Although the literature on executive remuneration has matured to the point where one can now sketch out a number of themes, it is far from complete and there are many more issues needing further research. For example, while many theories have been developed and tested for the UK and the US, research on other countries remains still limited. Why is there such a large variation in pay practices and governance guidelines? Do compensation practices in the EU, the UK, and the US gradually converge?

Our classification of countries' regulation inducing more or less efficient contracting also merits additional attention. Is there empirical proof for our classification of firms regarding the efficiency of their remuneration contracting? And, how can this basic

classification be extended? Addressing these issues should provide a better understanding about how executive compensation is determined and how remuneration contracting efficiency can be increased.

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Figure 2-1 Total CEO Pay 1997 and 2005.

Data extracted from both Murphy (1999) and Towers Perrin's 2005/06 Worldwide Total Remuneration report. The figure shows a comparison of the estimated compensation level in 22 countries in 1997 and 2005, with at least US $500 million in worldwide annual sales. The amounts are inflated and expressed in April 2005 U.S. dollars. Total pay is calculated as a sum of salary, bonus, options/LTIPs and other compensation. Salary represents the base salary including regular payments (vacation allowance, 13th month salary) and non-performance-related bonus; bonus includes target performance-based cash awards, Options/LTIPs includes the grant-date expected value of option grants and annualised targets from Long-Term Incentive Plans. Other Compensation includes both compulsory and voluntary company contributions. The data are extracted from both Murphy (1999) and Towers Perrin's 2005/06 Worldwide Total Remuneration report. All numbers are in 2005 US$.

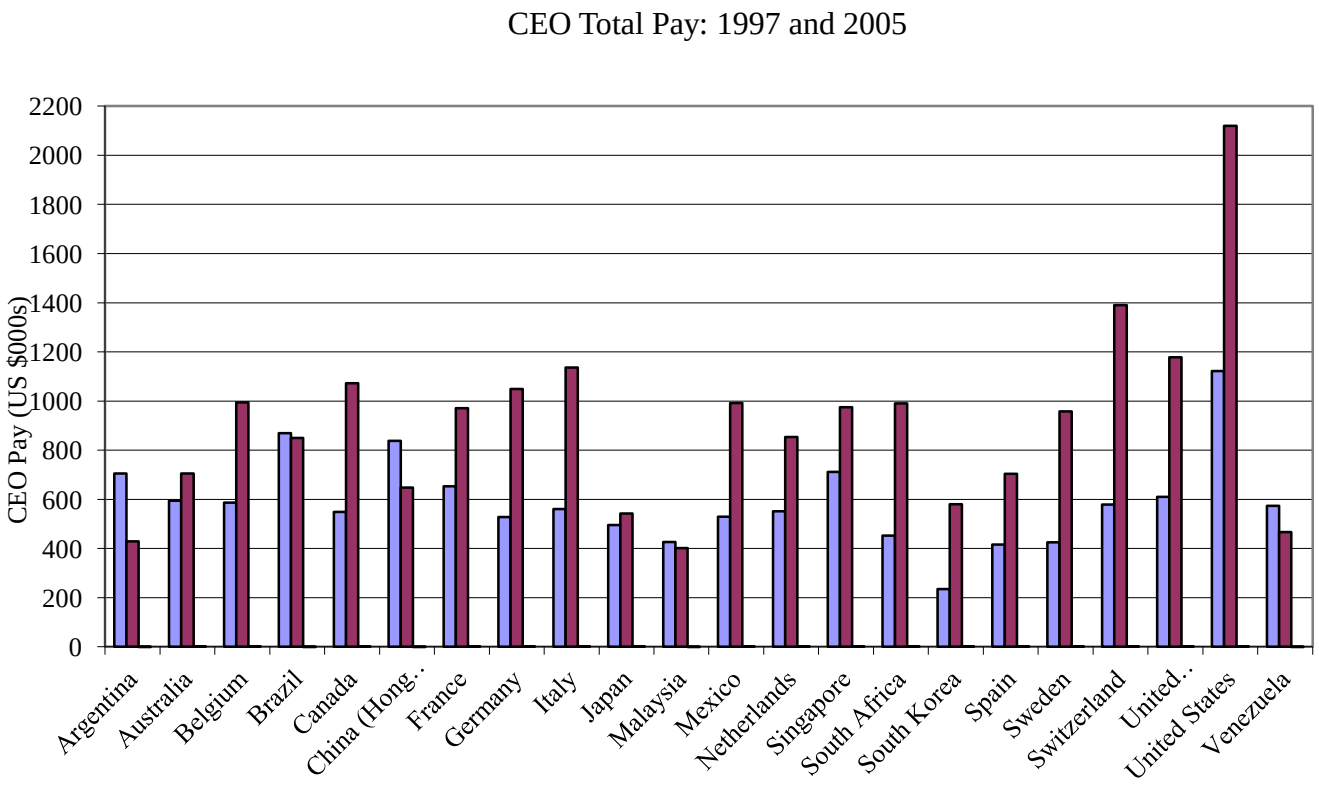

Figure 2-2 CEO Variable Pay.
The figure shows CEO level and composition of variable pay, i.e., variable bonus and long-term incentives, measured as a percentage of annual basic compensation in 2005. Variable bonus includes all payments that are (short-term) performance-related. Long-term incentives comprise stock options, restricted stock grants, and other awards. The data are from Towers Perrin's 2005/06 Worldwide Total Remuneration report.

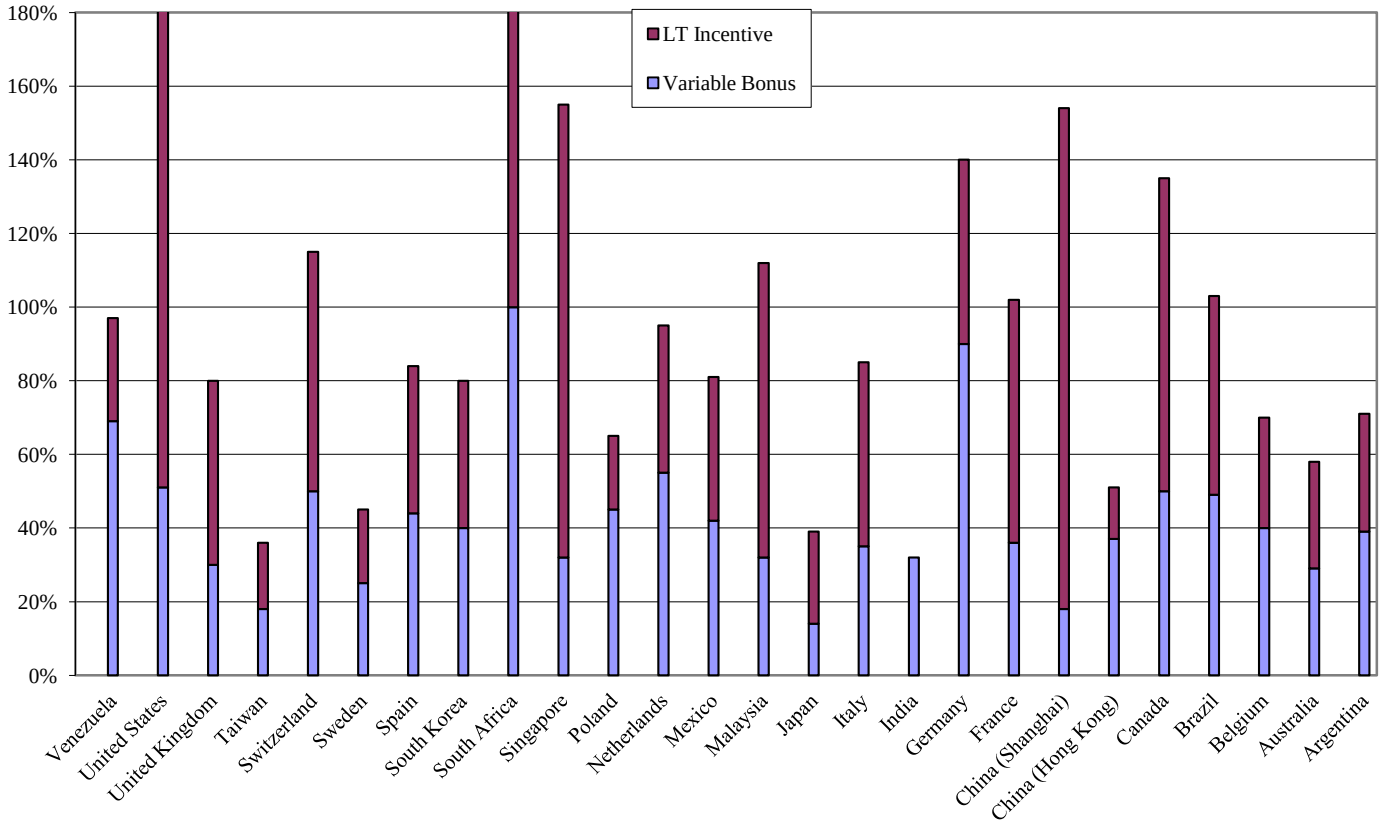

Figure 2-3 An International Comparison of Level and Mix of Pay.
The figure shows the estimated compensation level and mix for local employees of firms in 26 countries in 2005, with approximately US$ 500 million in worldwide sales. The amounts are expressed in US$ converted at the exchange rates of April 1, 2005. Salary represents the base salary including regular payments (vacation allowance, 13th month salary) and non-performance-related bonus; bonus includes target performance-based cash awards, Options/LTIPs includes the grant-date expected value of option grants and annualized targets from Long-Term Incentive Plans. Other Compensation includes both compulsory and voluntary company contributions.

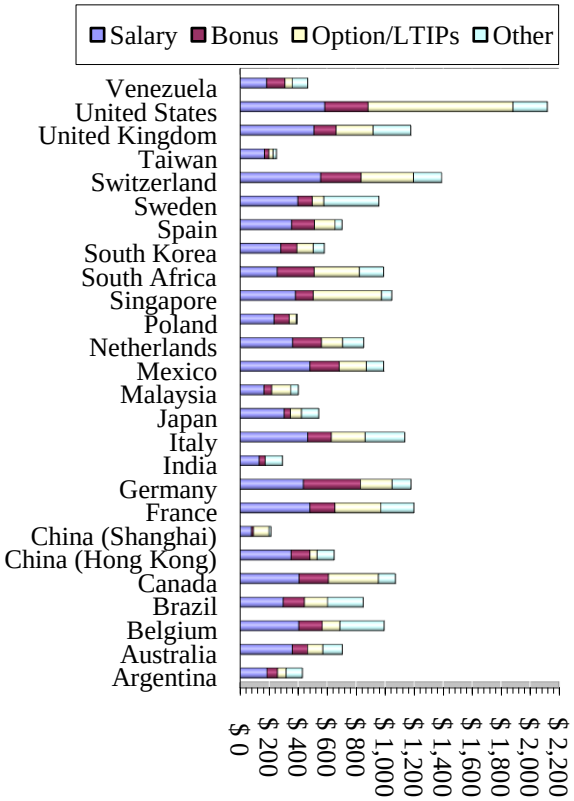

Table 2-4 Comparison of CEO Compensation in 2005/06 – US versus UK.[40]
The table shows estimates of typical CEO pay for companies with at least US $500 million in worldwide sales, Source: Towers Perrin's Worldwide Remuneration Survey 2005-2006. Benefits may depend on the years of service and company performance. Perquisites include the usage of corporate jets, the pursuance of pet projects, and the choice of headquarters. The remuneration survey present only selected items, i.e. the components presented may not add up to the total figure. All figures are in (2005) US$.

Pay Component		**US (in US$)**	**UK (in US$)**
Short-term			
	Base Salary	584,537	509,522
	Annual Bonus	227,969	152,857
Long-term			
	Stock Options, Stocks	771,589	254,761
Additional			
	Benefits	129,897	225,138
	Perquisites	108,248	35,548
Total			
		2,164,952	1,184,936

[40] Cf. Geiler and Renneboog (2010).

Table 2-5 Example of a CEO Compensation Package.[41]

The table shows level and composition of a CEO compensation contract example. The example shows the extent to which a manager is able to extract a very large amount of compensation out of the company. The example is not representative for the population of CEOs in industrial and commercial companies (the non-financial sector). Data are extracted from Manifest. All figures are in 2005 US$.

Base Salary		
	Total salary	$2,443,692
Short-Term Compensation		
	Total bonus	$3,973,574
Long-Term Compensation		
	2003 Long Term Incentive Plan	$23,096,167
	Deferred Bonus Scheme	$3,609,174
Others		
	Pension	$3,137,850
	Insurances, Benefits	$44,005
Total		
		$36,304,463

[41] Cf. Geiler and Renneboog (2010).

Table 2-6 International Governance Standards on Remuneration Disclosure.

Sources: 1) Corporate Governance Principles and Recommendations, August 2007; 2) Austrian Code of Corporate Governance, 2007; 3) Belgian code on corporate governance, July 2008; 4) IBGC Code of Best Practice of Corporate Governance, March 2004; 5) TSX Guide to Good Disclosure for Disclosure of Corporate Governance Practices, 2006; 6) Provisional Code of Corporate Governance for Securities Companies, January 2004; 7) Hong Kong Code on Corporate Governance, November 2004; 8) AFG-Recommandations sur le gouvernement d'entreprise, January 2008; 9) German Corporate Governance Code, June 2008; 10) Report of the Kumar Mangalam Birla Committee on Corporate Governance, February 2002; 11) New Regulation on Bank's Organisation and Corporate Governance, March 2008; 12) Principles of Corporate Governance for Listed Companies, 2004; 13) Malaysia Code on Corporate Governance, 2007; 14) Corporate Governance Code for Mexico, July 1999; 15) SCGOP Handbook of Corporate Governance, 2004; 16) Code of Best Practice for WSE Listed Companies, July 2007; 17) Proposals on the Corporate Governance Code, April 2007; 18) Code of Corporate Governance, 2005; 19) Unified Good Governance Code, May 2006; 20) King Report on Corporate Governance for South Africa (King II Report), March 2002; 21) Code of Best Practice for Corporate Governance, September 1999; 22) Swedish Code of Corporate Governance, May 2008; 23) Swiss Code of Best Practice for Corporate Governance, June 2002; 24) Taiwan Corporate Governance Best-Practice Principles, 2002; 25) The Combined Code on Corporate Governance, June 2008; 26) TIAA-CREF Policy Statement on Corporate Governance, March 2007;

Disclosure requirements on aspects of remuneration include the disclosure of: specific options granted, minimum vesting requirements for shares, perquisites, terms of appointment in the event of early termination, caps on severance pay, supplemental executive retirement plans (SERP), the various pay components, individual director pay, director pay on an aggregated level, the performance link of pay, a specific remuneration report. The items in the Compensation Committee section include the obligation to a compensation committee, a minimum number of members, and specific requirements regarding the Chair of the committee, and the composition of the committee.

X: Legal provision; C: Comply-or-explain; P: Best Practice / Recommendation; A only in Aggregate; R only in Relative; + depends on choice; - applicable under certain conditions; independent (indep.); executive (exec); exclusively (excl.); conflict (confl.); interest (int.).

Country	Disclosure requirements on aspects of remuneration											Compensation Committee			
	specific options granted	minimum vesting requirement	perqui-sites	termina-tion principle	termina-tion cap	SERP	pay compo-nents	individual pay	aggregate pay	perform-ance link	specific remun-eration report	compen-sation committee	mem-ber mini-mum	Chair	Composition
Australia[1]				C					C	C	C	C	3	indep.	majority indep.
Austria[2]				C		C	C	P	X			C		boarchair	
Belgium[3]	C		C	C		C	C	C		C	C	C	3		excl. non-exec., majority indep.
Brazil[4]	C		C	C		C			C			P			
Canada[5]												C			excl. indep.
China[6]												P		indep.	
China (HK)[7]	P		P	P		P		P				C			majority indep. non-exec.
France[8]	X		X	X	P	X	P	X				P		no confl.of int.	majority no int. confl., excl. non-exec.
Germany[9]	XA		X		C	X	X	X			C	P			
India[10]	X		X	X		X	X	X				X	3**	indep.**	excl. indep.**
Italy[11]				X			XR					X	3--5		majority indep.
Japan[12]												X+	3		min. 50% outside
Malaysia[13]								X				C			majority non-exec.
Mexico[14]									C						
Netherlands[15]	X		X	X		X	X	X		X		C			
Poland[16]															
Portugal[17]			X-	X		X-	P-	P-	X			X+			
Singapore[18]	P		P				P	P				P		indep.	excl. non-exec., majority indep.
Spain[19]	C			C		C	C	C			C	C	3	indep.	excl. outside
South Africa[20]	P	P	P	P		P	P	P				P		indep. non-exec.	majority non exec.
South Korea[21]												P			
Sweden[22]	C											C+	3		excl. non-exec. indep.
Switzerland[23]	XA		X-	XA		X-			X			P			majority indep. non-exec.
Taiwan[24]									P						
United Kingdom[25]	C	C	C	C		C	C	C		C	C	C	2/3		excl. non-exec. indep.
United States[26]	C	C	C	C		C	C	C		C		C			excl. indep.

Table 2-7 Estimated Pay-for-Performance Sensitivities (PPS).
The table gives an overview of CEO pay-for-performance sensitivities (unless stated otherwise) estimated in different studies. From the left to the right, the table gives the origin of the data set used (Country), the reference to the paper (Source), the dependent variable used in the study (DepVar), the firm performance measures (FirmPerf) and controls employed (Controls), as well as comments (Comment). The last column gives the estimated percentage change in CEO pay for a percentage change in the performance variable. SR indicates the measure for Shareholder return, SW indicates the measure for Shareholder Wealth. *, ** and *** stand respectively for p-values smaller than 5%, 1% and 0.1%.

Country	*Source*	*DepVar*	*FirmPerf*	*Controls*	*Comment*	*%(CEO pay) / % (DepVar)*	*Time period*
US	Murphy (1985)	ln(Salary+Bonus)	ln(SR)	position dummies		.09***	1964-81
US	Coughlan & Schmidt (1985)	ln((Salary+Bonus)/(Salary+BonusT-1))	(abnormal) SR	size, CEO age < 64		.14***	1977-80
Japan, US	Kaplan (1994)	log(Salary+Bonus)	d(SR)	n.a.	all directors	.06*	1980/81-88/90
US	Hall & Liebman (1998)	log d(Salary+Bonus)	SR	Market Index, Market Index-1, SR-1, Time, DismissP		.19***	19080-94
UK, US	Crespi & Gisbert (1998)	dln(total board remuneration / # board members)	ln(SR)	fixed effects (firm, year), size, ind.-perf., own.-conc.		.03***	1990-95
US	Bertrand & Mullainathan (2000)	log(Salary+Bonus+Options)	Ln(SW)	firm fixed effects, age, tenure		.38***	1977-94
UK	Conyon & Murphy (2000)	ln(Salary+Bonus) (all industries)	SR	n.a.		.12***	1969-95
UK	Gregg, Jewell, & Tonks (2005)	CEO pay	SR	size, gov-measure, industry, geographic location		.06***	1994-2002

d = real rate of change

Chapter 3

Executive Remuneration and the Payout Decision

3.1 Introduction

"The American craze for share buybacks shows no sign of abating. Returning capital to shareholders by repurchasing stock may soon be more popular than paying dividends. Investors may cheer because they pay less tax on buybacks. But they should also worry, because buybacks may be enriching managers at their expense." (The Economist, 23rd April 1998).

Are dividends and share repurchases substitutes for corporate payout? The economic answer to this question is simple. In a nutshell, dividends are paid out of earnings and result in a reduction of shareholders' equity. Repurchases reduce both the cash position and the number of shares outstanding, i.e. the leverage ratio increases. As these payout methods do not alter the firm value in perfect capital markets, investors should be indifferent as to the payout channel (Miller and Modigliani, 1961). In a simple model, Fried (2005) shows that a share repurchase is economically equivalent to the case of non-selling shareholders purchasing shares of selling shareholders at the current price and the decision of the firm to then issue a dividend. However, considering dividends and share repurchases as perfect substitutes ignores the many capital market imperfections induced by informational asymmetries, taxation, shareholder expectations, and managerial personal rent-seeking. Accordingly, the two payout methods are inherently distinctive and should not be regarded as substitutes. For instance, Ofer and Thakor (1987) acknowledge the differences between dividends and share repurchases by modeling that repurchases contain more information. Moreover, Stephens and Weisbach (1989) suggest that repurchases offer greater flexibility in quantity and timing than dividend payments. This is consistent with the idea by Jagannathan, Stephens, and Weisbach (2000), who observe that dividends are usually paid out of sustainable cash flows (operating cash flows), while stock repurchases are typically paid out of temporary cash flows (non-operating cash flows). Amihud and Li (2006) support the idea that, unlike dividends, stock repurchases preserve financial flexibility. Above all, it is important to note that the focus on the question whether repurchases will substitute dividends is misplaced, because of the underlying assumption that a single form of payout is optimal (DeAngelo, DeAngelo, Skinner, 2008). The question should rather be:

what are the main factors determining the choice of a particular form of payout, i.e. dividends or share repurchases and the combination of both payout methods?

While financial economists have proposed many theories to explain the surge in the importance of stock repurchases, there is some evidence that executive pay practices play an important role in the payout decision in the US (Fenn and Liang, 2001) and Finland (Liljeblom and Pasternack, 2006). Fenn and Liang (2001) observe that management stock options are negatively related to dividends but positively to repurchases. Liljeblom and Pasternack (2006) have a unique dataset that includes information on the dividend protection of equity-based compensation contracts and find that companies that have adopted such an option program show no tendency to avoid dividends. While executive compensation in general and stock options in particular are meant to function as a corporate governance mechanism that incentivizes management to pursue actions beneficial to shareholders, these empirical results cast doubt on this idea as the firm's payout decision may be influenced by incentive pay at the detriment of shareholders. Therefore, they nurture Bebchuk, Fried, and Walker's (2002) managerial power argument, which states that the popularity of executive stock options results from the fact that in the eyes of CEOs, they are the most effective way to extract wealth from the firm without provoking shareholder outrage. In this paper, we ask how the different components of CEO remuneration affect the level of corporate payout and the choice between the different payout channels in the UK?

The purpose of this paper is to provide new empirical evidence on the level of dividend and total payout, and the payout channel choice, while taking into consideration the executive pay practices in the UK, as well as accounting for taxation, market sentiment, major blockholder concentration, and some more control variables. We analyze these relations by means of quantile regressions, which enables us to study the payout decision at various levels. We find that CEO stock options are associated with a lower dividend payout. The results support the managerial power hypothesis: the CEOs holding stock options avoid dividend payments as the reduction in share price following a dividend announcement hurts the value of their stock options. We use a nested logit model to investigate the payout channel choice conditional on the firm committing to pay out earnings. We model that a CEO first determines the level of payout (relative to the previous year) and then decides about the payout channel.

Our results confirm that CEO stock options in firms that increase their payout are negatively associated with dividend payout and positively associated with share repurchases.

While the relation between executive remuneration has been studied for the US and Finland, this is the first study on the UK. While the UK is similar to the US concerning the breadth and maturity of its capital market (Ferris, Sen, and Yui, 2006) and its corporate governance regime, the results of previous studies on the US cannot be readily applied to the UK setting due to various differences concerning the taxation of dividends and share repurchases, as well as due to differences in the concentration of ownership (Geiler and Renneboog, 2010; Renneboog and Trojanowski, 2011). Our study uses a unique data set that combines both actual share repurchase information and detailed information on the various components of pay. As we dispose of detailed information regarding all the equity-based components of pay, we explicitly test the impact of stock options and restricted shares on the payout choice of CEOs. We can draw on long-term payout data for virtually all firms listed in the UK.

The paper is organized as follows. In Section 2 of this paper, we present a review of the payout literature and formulate our conjectures. Section 3 presents the estimation methods (quantile, tobit, multinomial regressions, and nested logit) while we present the data, provide the descriptive statistics, and discuss the regulatory settings in Section 4. Section 5 discusses the empirical results. A summary and a discussion of our findings can be found in section 6.

3.2 Literature and Hypotheses

In this section, we discuss how we expect executive remuneration contracts to affect the payout decision. We also consider other motives to pay out earnings such as market sentiment, taxes and the role of ownership concentration, and some aspects of corporate governance. Table 3-1 presents an overview of our main conjectures.

[Insert Table 3-1, about here]

3.2.1 Managerial Discretion, Executive Remuneration Contracting and Ownership Concentration

Executive Remuneration

The main justification to introduce equity-based compensation is the reduction of agency costs as the incentives of top management and stockowners are then more aligned. Indeed, executive directors[42] with large incentive-oriented remuneration packages (which include stock options or restricted stock) are also co-owners of the firm and hence are expected to focus on value creation. However, a payout decision that is favorable to management as it makes their compensation packages more valuable, is not necessarily the best decision for all the shareholders. Usually, share repurchases may have an immediate positive impact on the share prices because a repurchase may signal to the market that the stock is underpriced or will enable the most pessimistic shareholder to sell their stake. Still, how credible is this signal of undervaluation when one realizes that for the top managers an (short run) increase in share price leads to a rise of the value of their (vested) stock options and restricted stock which can then be exercised or sold. For the US, Fenn and Liang (2001) suggest that the growth of share repurchases is related to the growing use of managerial stock incentives since the 1990s. This stock option hypothesis is in line with the findings of Kahle (2002) who details that firms heavily relying on stock-option-based compensation are more likely to repurchase their stock. Still, Aboody and Kasznik (2008) demonstrate that the lower dividend payout in firms with large equity-based compensation is only partly offset by stock repurchases. In other words, executive stock options and restricted stock lead to a reduction in payout, and induce self-interested managers to favor repurchases over dividends.

Therefore, we conjecture that *CEOs with high levels of executive stock options or restricted stock prefer share repurchases over dividends, and prefer no payout over a dividend payout(C1).*

The above conjecture implicitly assumes that the equity-based compensation is not dividend protected. This means that the management does not receive dividends on restricted

[42] We refer to an executive director as inside director who is also an executive within the organization (UK definition).

shares that have not yet vested as the management does not legally own these share as yet. Likewise, the management does not get any dividends on stock options (regardless on vesting). Without dividend protected equity-based pay, top management can indeed shy away from paying out dividends because anticipated dividends drive the share price down which decreases the value of the managerial stock options and the restricted stock. Dividend correction can happen on an ex ante or ex post basis. In the former case, it is stipulated in the stock option contracts that the exercise price will be reduced by an amount equal to the dividend per share, whereas in the latter case the forgone dividends can be paid out in cash or in shares. If dividend protection were widely used, the above conjectures will not be empirically supported as dividend protection could turn the payout channel choice of the top management into a neutral decision. While dividend protection may help to counterbalance the negative effects of a decrease in the share price for executives, there is no empirical evidence for the UK on this aspect of executive contracting due to a lack of consistent reporting. Therefore, we have contacted some leading compensation consulting firms in the UK (Towers Watson, Hay Group) and have learnt that dividend protection is a relatively new phenomenon and is only used among the larger firms (part of the FTSE100). Of the limited number of firms using dividend protection over our sample period, two thirds rely on an ex post approach to compensate the actual value of the unpaid dividend and one third implement an ex ante correction for anticipated dividend payments. Given that we will include virtually all listed companies in the UK (including small caps and fledglings) in this study, the above conjecture is worth testing (in aggregate and for size quantiles). Liljeblom and Pasternack (2006) show that Finnish firms do not avoid paying out dividends if the managerial stock options are dividend protected, but this relation is absent in case of no dividend protection.

The Role of Large Shareholders

If agency costs are high, shareholders will prefer a high (stable) payout policy as a steady stream of cash outflows curbs the amount of corporate funds at the managers' discretion. The advantage of a high payout policy to the shareholder of cash rich firms is that the excess cash is returned to the shareholder and is not wasted on empire building projects. Moreover, the advantage of this policy within growth firms is that the management is occasionally forced to face the scrutiny of the capital markets when it needs to collect funds for further investments. From this perspective, shareholders may prefer a high dividend payout

over share repurchases as the latter are part of occasional buy-back programs whereas dividend payout is usually rather sticky in UK firms (Renneboog and Trojanowski, 2011). As such, a high dividend payout policy (like high leverage) can be seen as a precommitment device, which is especially important in the context of asymmetric information. Alternatively, a high payout policy may not be a supplementary corporate governance mechanism, but rather a device which is complementary to other governance mechanisms such as disciplining large shareholders. In other words, large outside shareholders – such as industrial and commercial companies, or individuals and families – and non-executive directors owning large share stakes – may have to be present to impose a high payout policy. In addition, we expect that these non-institutional shareholders in an agency context would prefer ceteris paribus share repurchases to dividends because of the associated positive impact on their share stake.

Thus, we conjecture that *in the presence of high levels of non-institutional ownership (individuals and families, companies, non-executive directors) a high payout is preferred over no payout and share repurchases over dividends (C2).* An alternative conjecture would be that in firms with strong outsider shareholders, the management is sufficiently monitored such that a high payout is not necessary to curb managerial discretion (Oswald and Young, 2008). Apart from the above agency issues, there may also be other reasons for outside shareholders to prefer a specific payout policy, such as taxes which we will discuss in the following subsection.

Institutional shareholders (mutual funds, unit trusts, pension funds, banks) make up the most important shareholder category in the UK. Still, their individual influence on the firm may be limited because they usually hold relative small share stakes following portfolio investment restrictions, i.e. limits on how much they can invest in a single firm. Furthermore, institutional shareholders may lack monitoring expertise and may not be interested in close monitoring as this may give them price-sensitive inside information which may temporarily immobilize portfolio rebalancing (Faccio and Lasfer, 2000). With exception of some activist investment funds and private equity investors (Becht, Franks, Mayer, and Rossi, 2009), financial institutions have usually been passive investors. Institutional investors are likely to have a preference for a high payout in an agency framework (see above) and prefer a steady stream of dividends to rebalance their ownership portfolio in order to protect the liquidity of

their investments. We thus conjecture that *in the presence of high levels of institutional ownership, a higher payout is expected and dividends are preferred to share repurchases (C2).*

Executive directors who own large share stakes and who want to safeguard private benefits of control aim at maintaining more discretion over the cash flows and therefore would prefer a low payout policy. In case of a payout, they prefer share repurchases to dividends, because share repurchases give them more discretion about the timing of the payout. Furthermore, in some cases a share repurchase may increase the executives' ownership concentration (Stonham, 2002). Therefore, we conjecture that in *the presence of high levels of executive ownership concentration (CEOs, executives), payout is lower and, in case of a payout, share repurchases are preferred to dividends (C2).*

3.2.2 Taxation

The relative taxation burden of share repurchases and dividends may influence the payout decision as well as the payout channel. Whether dividends or repurchases are given priority hence depends on the ownership concentration of the various types of shareholders. Kooli and L'Her (2010) report evidence from Canada that taxes have a significant impact on a firm's decision to actually repurchase shares. Renneboog and Trojanowski (2011) argue that the relative attractiveness of dividends and share repurchases to small and large shareholders is connected to the respective taxation regulations. Furthermore, it seems that management's payout decisions take into account the tax implications of the greater institutional holdings in the US (Lie and Lie, 1999).

The question emerges whether ownership concentration influences payout policy or vice versa. US research suggests that it is ownership that affects the firm's payout policy: Perez-Gonzalez (2002), for instance, shows that tax reforms in the US are often followed by changes in payout policy consistent with tax-induced preferences of the major shareholders. Michaely, Thaler, and Womack (1995) find that changes in payout policy do not necessarily lead to adjustments of ownership concentration and structures.

Others have pointed towards the differences in tax treatment between foreign and domestic investors and claim that these differences serve as determinant of share repurchases and dividends. This argument may be more valid for smaller economies relying on foreign investments. For Finland, Liljeblom and Pasternack (2006) show that a higher foreign

ownership explains a tendency toward share repurchases. Geiler and Renneboog (2010) suggest that the tax treatment of dividends and share repurchases under UK legislation has implications on firm decision-making. On the basis of income tax rates, corporation tax rates, and various sources on the tax treatment of both dividends and share repurchases, the authors calculate after-tax values to different types of investors and infer the preferences of individuals and families, pension funds, and corporations regarding the payout method. In sum, they suggest that individuals have preferred share repurchases over dividends over the period 1996-2007, pension funds preferred dividends before 1997, but became tax-neutral subsequently, and corporations (including financial firms) have preferred dividends over that time window. We therefore formulate the following conjectures: *Executive and nonexecutive directors, as well as individuals and families prefer share repurchases to dividends, but the after-tax value of payout induces an inverse preference for corporations and financial institutions (C3).*

3.2.3 Sentiment

Market sentiment refers to behavioral biases that affect the preference for specific payout channels. The concept was pioneered by Baker and Wurgler (2004a) who show that in some time periods the dividend premium is positive (the shares of 'safe' dividend payers are higher valued than the shares of those firms that do not pay dividends and go for capital appreciation) whereas in others, the premiums are negative.[43] They conclude: "The essence of the catering theory is that managers give investors what they currently want" (Baker and Wurgler, 2004a: 1160). A detailed examination of the dividend premium's development over time can shed more light on this idea. In the US, the dividend premium has been positive prior to 1987, but negative afterwards up to 2010, with the exception of 2002 and 2008 (Baker and Wurgler, 2004b, Baker, 2010[44]). Ferris, Sen, and Yui (2006) concur with these findings for the UK: they have similarly observed a negative dividend premium during the late 1990s. The propensity to pay out increases with a positive dividend premium, but decreases with a negative dividend

[43] Baker and Wurgler (2004a) assume for their models that: investors' demand for dividend-paying stock is uninformed and varies over time, arbitrage is limited, and managers rationally cater to the demand of investors. They construct the dividend premium as the difference in the logarithms of the average market-to-book ratios of payers and nonpayers.

[44] The development of the investor sentiment for the US presented here is available on the website of J. Wurgler, under 'Investor sentiment data (annual and monthly)' at: http://pages.stern.nyu.edu/~jwurgler/main.htm.

premium. Thus, we conjecture that *firms issue dividends if the premium is positive and retain earnings or repurchase their shares in case of a negative dividend premium (C4).*

The literature on investor sentiment is related to the concept of overconfidence, which is the belief that the precision of one's information is greater than it actually is (Gervais, Heaton, and Odean, 2003). Odean (1998) develops models in which overconfident investors overestimate the precision of their knowledge about the value of a financial security and Barber and Odean (2001) argue that overconfident investors trade more and have a lower expected utility. Thus, this type of investor believes more strongly in its own valuations, and ignores the beliefs of others. This intensifies the differences of opinion, which causes more trading. The most robust effect of overconfidence is that trading volume increases when price takers, insiders, or market makers are overconfident in the stock price evolution. Similarly, investors may have the tendency to go long on a 'hot' stock and to go short on a 'cold' stock, in the hope that the stock keeps its momentum, i.e. increases in the price will be followed by further increases and vice versa (Carhart, 1997). We therefore conjecture that *investor confidence in a specific stock, as proxied by the stock's trading volume and momentum, leads to a relative preference of share repurchases to dividends (C4).*

3.2.4 Other Payout Determinants

In addition to the determinants detailed above, other firm characteristics such as size, performance and risk measures, as well as behavioral biases on the side of management, may also affect the payout decision.

Firm Characteristics

The propensity to pay dividends increases in firm size and growth opportunities (Fama and French, 2001, Denis and Osobov, 2008a). Grullon and Michaely (2002) report for the US that large-established firms also show a higher propensity to payout cash through share repurchases. In sum, larger companies tend to pay out a substantial percentage of earnings in dividends and share repurchases (Allen and Michaely, 2003, Hu and Kumar, 2004). We proxy for firm size and growth opportunities of a firm by taking into account the index membership (*FTSE100*, *FTSE250*, *FTSE Small Cap*, *FTSE Fledgling*) and *Market-to-book.*

Adjusting for firm performance, leverage, and the level of riskiness of a company is equally common practice in the corporate finance literature: for instance, dividend-paying firms are typically more profitable than those that do not pay out dividends (Fama and French, 2001, Grullon and Michaely, 2002, Renneboog and Trojanowski, 2011). Likewise, more profitable and less levered firms tend to prefer share repurchases to repaying debt (Hovakimian, Opler, and Titman, 2001, Jagannathan and Stephens, 2003). Renneboog and Trojanowski (2011) add that high leverage decreases the likelihood of payout. Hence, we conjecture that more profitable firms tend to payout more and that highly levered firms tend to payout less and proxy for firm performance with return-on-assets (*ROA*) and for the current level of leverage with *Debt/Assets*. In the case of payout, we assume that more profitable firms with low leverage prefer share repurchases to dividends. We also think that the specific riskiness of a firm affects the payout decision: a firm with more volatile cash flows may be more prone to changes in payout policy. Consequently, we proxy for firm risk with the variance of cash flows (*Var(CF)).*

The 'free cash flow theory' as presented by Jensen (1986) suggests that, instead of signalling the company's true worth to the market, dividends and repurchases are a way to reduce overinvestment by management (Allen and Michaely, 2003). In other words, the theory states that by returning excess cash flow to the shareholders, the agency problem can be mitigated.[45] Likewise, Fenn and Liang (2001) present evidence that share repurchases and dividends are positively related to net operating cash flow. Consequently, we conjecture that the level of cash flow is positively related to corporate payout. We use Cash Flow/Assets to proxy for the available cash in a company.

Dividends are often interpreted as a commitment device of the firm to return cash to the shareholder in the future, while share repurchases are typically used as transitory payout option (De Angelo et al., 2008). Brav, Graham, Garvey, and Michaely's (2005) results suggest that dividend-paying firms are reluctant to deviate from the historic level of dividends and that managers put in substantial effort to keep payout at the historic level. We assume that past payout is largely driven by dividends and hence conjecture that it is associated with a stable level of payout. In the case firms have to decide between share repurchases and dividends, we

[45] Easterbrook (1984) even advocated increasing the ongoing dividends to such a level that outside capital needs to be raised frequently.

expect them to opt for the latter. We control for the previous levels of payout with *Past Payout/Assets*.

Managerial Behavioral Bias

Personal characteristics of the top decision makers such as overconfidence or optimism may affect corporate decisions: For example, Malmendier and Tate (2005) suggest that managerial overconfidence of CEOs can bring about corporate investment distortions. Ben-David, Graham, and Harvey (2007) find that firms with overconfident CFOs pay out fewer dividends. Heaton (2002) and Graham, Harvey, and Puri (2008) claim that optimistic managers use more (short term) debt. DeAngelo et al. (2008) conclude that behavioral biases at the managerial level may substantially affect the payout decision. Interestingly, the market also seems to react more positively to dividend changes initiated by optimistic managers rather than by rational managers (Bouwman, 2010).

A large part of the literature on overconfidence and optimism goes back to the "better-than-average effect", according to which people tend to exaggerate their own talents (Alicke, Klotz, Breitenbecher, Yurack, Vredenburg, 1995). This is related to a certain explanatory style, according to which good outcomes are attributed to one's self and negative outcomes to bad luck (Miller and Ross, 1975). Optimism is partly attributed both to the extent to which one is in control and to which one is committed (Langer, 1975, Weinstein, 1980). According to Malmendier and Tate (2005: 651): "Top corporate managers are likely to satisfy both of these pre-conditions."

Overconfidence and optimism have been measured in a number of ways. Malmendier and Tate (2005), for instance, measure overconfidence as the degree of under-diversification of CEOs, i.e. the extent to which they do not sell in-the-money options. Lin, Hu, and Chen (2005) measure optimism in CEOs according to whether their earnings forecasts frequently exceed actual earnings. Following a similar approach, we calculate a variable called *Dividend Surprise* that measures the difference between the actual dividend paid and the estimated 12-month forward dividend lagged by one year.[46] The idea being that a positive surprise indicates that the CEO is more optimistic about the future of the firm than analysts had anticipated. Likewise, we argue that a negative dividend surprise indicates a more pessimistic view of the CEO about

[46] The 12-month consensus dividend for share forecast (D1FD12) is derived from Datastream. We assume no dividend surprise in case we find no deviation from the forecast or missing information.

the future of the firm. We conjecture that overconfidence and optimism on the side of the CEO may be negatively related to the decision to payout: overconfidence and optimism may lead a CEO to overestimate the return on investment projects and consequently to prefer investing in projects to returning funds to shareholders. Likewise, in the case of payout, CEOs may opt for share repurchases in order to keep the level of commitment as low as possible.

The question remains whether all executives are susceptible to overconfidence and optimism in the same way. Firstly, the ability of a CEO to correctly evaluate the future situation of his firm may increase with age and professional experience, which in turn may lower his tendency to fall prey to overconfidence and optimism. Consequently, a younger and less experienced CEO may decide to invest more in projects, as he overestimates the returns. Gervais and Odean (2001), for example, suggest that overconfidence in a trader increases at the beginning of his career, when he is inexperienced and successful, but gradually decreases over the course of his career. Hence, we conjecture that a younger CEO tends to avoid payout in order to be able to invest in more projects, and in the case of payout, prefers share repurchases to dividends to avoid commitment.

Secondly, the tendency of a CEO to increase the firm's dividend without good cause may be related to his gender: Barber and Odean (2001: 261), for example, argue that, "in areas such as finance, men are more overconfident than women." Literature details that men seem to behave more competent in financial matters and that they tend to attribute performance on male tasks to skills rather than luck (Deaux and Emswiller, 1974, Prince, 1993). We conjecture, that male executives tend to be more prone to be overconfident and to avoid payout, while in the case of payout, they prefer share repurchases to dividends in order to keep the level of commitment as low as possible. In trying to capture these differences at the managerial level, we hence include the variables *CEO age*, CEO *tenure*, and *CEO gender*.

Lastly, the role of the board on the payout decision should not be underestimated: a larger board and a higher proportion of female directors are likely to counterbalance the CEO's overconfidence and optimism in his decision to avoid payout. We conjecture that a larger board and a higher proportion of female directors may be positively related to total payout. Hence, we include the variables *boardsize* and our proxy for the proportion of female directors on the board (*Female (%)*).

3.3 Methodology

To examine the factors driving the payout choice, we first rely on quantile regressions. In a second step, we estimate a multinomial logit model to investigate what factors determine the payout channel choice whereby the choice set consists of no payout, dividends, share repurchases, or a combination of dividends and share repurchases.[47] We perform a Hausman test to alleviate the concerns of outcomes violating the independence of irrelevant alternatives (IIA) assumption, which implies that adding another payout choice does not affect the relative odds between the two alternatives considered. To further alleviate this concern, we also estimate a multinomial probit model for the same set of choices as mentioned before. Third, we model the payout level, the payout channel choice, and changes in the payout policy as a 3-dimensional choice set by means of a nested logit model.

3.3.1 Quantile Regressions

The reason why we rely on quantile regressions to study how the different components of CEO remuneration affect the level of corporate payout is that the complexity of the interactions between different factors in our model leads to data with unequal variation of one variable for different ranges of another. Quantile regressions provide a more complete picture of the conditional distribution at the selected percentiles. Furthermore, quantile regressions are more robust to outliers as quantile regressions minimize the asymmetrically weighted sum of absolute errors (Hallock, Madalozzo, and Reck, 2008):

$$\sum_{i=1}^{n} / y_i - X_i'\beta(\tau) / \times [\,(\tau)\, I\,(y_i > X_i'\beta(\tau)) + (1 - \tau)\, I\,(y_i \leq X_i'\beta(\tau))\,].$$

Here, y is the dependent variable, X denotes a matrix of covariates, and the coefficient β depends on the estimated quantile τ. The bracket on the right hand side describes a function that assigns weight (1 - τ) to observations below the predicted value and weight (τ) to those observations above the predicted values. The function *I* is a dummy variable taking the value of 1 if the condition in the parentheses is fulfilled and 0 otherwise. It is important to note here that for each quantile all of the available information is being used. We employ the quantile regression at the 25th, 50th and 75th percentile to learn more about the relation between our

[47] We will combine the cases of share repurchases and dividends with those of share repurchases only, as there are only few observations in the latter type of payout.

independent variables and the firm's decision to payout at different levels, which we measure as total- and dividend payout, scaling both variables by total assets. In addition, we compare the results based on the median (MAD) to the results obtained from a random effects regression on the mean and a Tobit regression.

We run the following quantile regression (with quantiles labeled p):

$$Payout_{it} = \alpha^{(p)} + \beta_1^{(p)} \times \textbf{Remuneration variables}_{it} + \beta_2^{(p)} \times Taxation\ variables_{it} + \beta_3^{(p)} \times Sentiment\ variables_{it} + \beta_4^{(p)} \times Other\ determinants_{it} + \sum_{k=1}^{12} \gamma_k \times Industry_k ,$$

where payout stands for (i) total payout and (ii) dividends, adjusted for assets, EBIT and cash flow. The *Remuneration variables* include total salary, fees, bonus, stock options and restricted stock, miscellaneous pay (e.g. recruitment incentives, transaction bonuses, relocation expenses, severance pay) and other components of pay (e.g. insurance payments) – all adjusted for assets. The *Taxation variables* are indicator variables capturing the periods with a change in the rules on payout taxation. The *Sentiment variables* include the *Dividend Premium* and the *Trading Volume* of stocks over shares outstanding as well as our lagged *momentum* variable. Moreover, we use the following ownership variables related to control concentration: share stakes owned by the *CEO*, executive and n*on-executive directors*, *institutional investors*, *individual and families (*not related to a director), other companies, and *Pension funds*. The *Other Determinants* include variables representing firm size (e.g. index membership *FTSE100*, *FTSE250*, *FTSE SmallCaps*, *FTSE Fledglings*). Firm performance comprises (*ROA*, *Market-to-book*, lagged *Free Cash Flow over assets), Past (Dividend) Payout over assets*, leverage (*Debt/Assets*), and Risk (*Variance of Cash Flows)*. We also include internal corporate governance variables (board and CEO characteristics such as *Boardsize*, committee membership, percentage of females on the board (*Female %*), *CEO gender*, *age* and *tenure*.

3.3.2 Multinomial Regression Models

We also model the payout decision by means of a joint estimation of the likelihood that a firm makes a payout and that the decision maker chooses for a specific payout. In short, we investigate how the different components of pay affect the choice between the different payout

channels. We assume that the order of the alternative payout channels is arbitrary (as there is no natural ordering to the decision maker), and that the CEO maximizes his individual utility. As we cannot observe the utility of a payout alternative to an individual *I* at time *t*, we divide it into an observable and non-random part (μ) and an unobservable error part (ε): $U_{it} = \mu_{it} + \varepsilon_{it}$. We try to explain μ by our set of alternative variables. A positive beta coefficient implies that a decision maker attaches a positive utility to the corresponding characteristic. Accordingly, as we assume that there is no random taste variation, no correlation of unobserved disturbances over time, and that the unobservable errors per individual decision maker and payout alternative are *mutually independent*, we apply a log Weibull distribution. We test for IIA property by means of the Hausman and McFadden (1984) test which compares the estimate of β using all alternatives to the estimate of a subset of alternatives. We assume the error terms to be independent across CEOs, but not necessarily so across time. In addition, we clustered all the standard errors on a firm level. The systematic part for our multinomial logit reads as follows:

$$\mu_{it} = \alpha + \beta_1 \times \textbf{\textit{Remuneration variables}}_{it} + \beta_2 \times \textit{Taxation variables}_{it} + \beta_3 \times \textit{Sentiment variables}_{it} + \beta_4 \times \textit{Other determinants}_{it} + \sum_{k=1}^{12} \gamma_k \times \textit{Industry}_k.$$

3.3.3 Nested Logit Models

We use a nested logit model to investigate the payout channel choice conditional on a firm's payout. In our setup, the decision maker essentially needs to answer two questions: first, what is the payout level, and second, which of the payout channels is appropriate to distribute the designated funds? The nested structure of this model is illustrated in Table 3-2.

[Insert Table 3-2, about here]

We model the *payout channel* choice as two different alternatives: (1) dividends, and (2) share repurchases, and dividends and share repurchases. We add an additional layer of complexity called change in *payout policy*, where we define the change in payout policy as the decision to increase, keep stable, or decrease the level of the total payout. We consider a growth rate larger than five percent as an increasing payout, a growth rate between zero and five percent as a stable payout policy, and a negative growth rate as a decreasing payout.

We assume a firm commits to a payout and decides in a first step among three nests (K=3): increase, keep stable and decrease the level of total payout and then, in a second step, between the alternative payout channels available within each nest: (1) dividend payout or (2) share repurchases, and dividends and share repurchases.

The nested logit model is based on the same utility function as the multivariate model discussed above, yet it offers an alternative way to deal with the IIA property: (i) it allows the disturbances to be correlated, and that they have the same correlation within a nest, but also that they remain independent across nests. Accordingly, the IIA assumption holds within each nest, but is not maintained across alternatives in different nests.

3.4 Data

This study explores a very large, unique dataset comprising virtually all listed firms in the UK. We describe the data sources, sample selection procedure, and the descriptive statistics.

3.4.1 Data Sources and Sample Selection

We select a sample of all UK firms listed between 1996 (following the release of the Greenbury Report on Director's Remuneration in 1995) and 2007 from BoardEx and Manifest. The sample is close to the population of the UK companies listed on the London Stock Exchange (LSE). We have payout information for 1,906 companies, and information on 13,197 firm-years for CEOs and CEO-equivalents. The sample comprises companies listed on the FTSE100, FTSE250, FTSE Small Cap, FTSE Fledgling, and FTSE Alternative Investment Market (AIM).[48] For all these firms, we collect from Datastream payout data on (i) dividends – both the actual cumulative gross year-end dividend paid and the expected dividends. Information on actual share repurchases are from BvD Zephyr, which has been verified using CapitalIQ. The remuneration of CEOs, the other executive directors, and the non-executive ones. We also gather information on directors' characteristics (such as position, gender, tenure, age) from BoardEx and Manifest. The ownership stakes held by insiders and outsiders are collected from Thomson One Banker and PricewaterhouseCoopers and accounting information, sector aggregation, and share price data stem from Datastream Advance. The four

[48] FTSE Fledgling and FTSE Alternative Investment Market overlap partially.

Fama-French-Carhart factors for the UK are calculated by means of data from the *Style Research Markets Analyzer*.

We made a few adjustments to the length of the financial year: (i) in case the reported length of the financial year deviates from the standard 365 days, we adjust the accounting and remuneration information accordingly and (ii) when a financial year does not coincide with the reported calendar year, we apply the following rule: if the reported end of the financial year lies within the first six month of a given year, the entry belongs to the preceding calendar year, whereas when the year end is within the last six month of a given year, we relate the information to the current calendar year.

3.4.2 Payout Data

We compile the information on share repurchases and dividends from Datastream, Manifest, and Zephyr.

A look at our sample reveals, that dividend payments are still the most important payout channel, with 79% of the firms opting for it. Almost 17% of the time, firms choose for earnings retention, in 5% of our observations, firms opt for both dividends and share repurchases, and in solely 0.3% of all cases, firms decide to engage in share repurchases. An in-depth analysis reveals the payout channel choice varies substantially with ownership: While there is relatively little variation in the tendency to payout dividends or to solely engage in share repurchases, matters are different for earnings retention: In the case of individual shareholders being the largest owner, 22% of the firms decide for no payout. In contrast, only approximately 8% of the pension funds choose for earnings retention. Likewise, we find individual shareholders as largest owners to be the least likely (3.5%) to opt for both dividends and share repurchases, and pension funds to be most likely (7.7%) to choose this payout channel.

In addition, it is also interesting to consider the average amounts paid out: Interestingly, we find that firms pay out on average 32% of their EBIT with either dividends or share repurchases as their sole payout channel. This suggests that both channels may be seen as alternatives. Using both payout channels, i.e. dividends and share repurchases, firms tend to distribute on average a significantly larger share (51%) of their EBIT. In line with the results presented above, pension funds tend to payout by far the largest share, almost 70% of their EBIT, via both dividends and share repurchases.

Figure 3-1 reveals the development of payout over time[49]: dividend payout over EBIT (EAT) is fairly stable over all years, with a peak in 2002 of 37% (66%) and a low at the beginning (end) of the sample of 28% (47%). Share repurchases are only observed since 2001: There is considerable variation in the amount paid out via this channel: The amount paid out in 2007 exceeds both EBIT and EAT, but is only close to 8% of EBIT (16% of EAT) in 2005. The amount paid out via both dividends and share repurchases increases from 1998 onwards and reaches a high of about 60% of EBIT (119% of EAT) in 2001, but drops then sharply by approximately 8% and decreases further to 45% (72%) in 2007. Average payout over all payout channels does not vary so much over the years: We find an average of 28% of EBIT (49% of EAT) that firms choose to payout via all available channels, with a peak in 2003 of 32% (58%) and a low in 2007 of 25% (38%). The average payout conditional on payout is only slightly higher over all years: we find an average payout over all channels of approximately 34% of EBIT (57% of EAT).

[Insert Figure 3-1, about here]

Table 3-3 depicts that dividends are rather stable in the range of 28-37% of EBIT. Share repurchases are not often used as a payout device in isolation (not combined with dividends) and hence show a much more volatile pattern. While dividends are used to transfer money to shareholders on a regular basis, share repurchases are used to pay out large amounts of cash periodically. Combining payout by means of dividends and share repurchases occurs more frequently: firms adopting the payout combination pay out 51% of EBIT on average.

[Insert Table 3-3, about here]

How does the development of the payout policy in the UK relate to the international development of payout? In the US, firms traditionally preferred to pay out dividends to share repurchases (Fama and French, 2001; Grullon and Michaely, 2002). However, from the 1990s, there has been an unprecedented growth of share buybacks. While DeAngelo, DeAngelo and Skinner (2004) and Hsieh and Wang (2007) confirm that the number of dividend paying firms decreased significantly, they also point out that this phenomenon went hand in hand with a

[49] It is important to note that the combination of dividends and share repurchases is solely based on firms using both payout methods simultaneously.

marked increase of the amount of dividends paid out by high-dividend paying firms.[50] Grullon and Michaely (2002) suggest that share repurchases in the US substituted dividends, as the total payout has stayed more or less constant. Figure 3-2 details the evolution of the payout channel choice in the UK. The number of UK firms paying dividends decreases over the period from 1998 until 2007 from 86% to 55%, which is in line with the findings of Ferris, Sen and Yui (2006), who report a decline in the number of dividend payers from 75.9% to 54.5% over the period 1988 through 2002, with much of the decline happening in the 1998-2002 period. From 2001 onwards, an upward trend towards more combined payout (share repurchases and dividends) can be observed. Only very few firms rely solely on share repurchases to return funds to shareholders, which implies that share repurchases are not a substitute for dividends. Thus, we do not find the stark increase in the number of share repurchases in the UK as reported for the US by e.g. De Angelo et al. (2004), but we find some evidence for an increased usage of combined payout. This is in line with Renneboog and Trojanowski (2011), who also only provide weak support for the 'dividend substitution hypothesis'.

[Insert Figure 3-2, about here]

3.4.3 Remuneration Data

The remuneration of executive directors consists of the following parts: (i) salary, (ii) fees, (iii) bonus, (iv) equity-based pay, (v) miscellaneous remuneration, and (vi) other remuneration. The *salary* is a fixed amount usually set by the compensation committee and is commonly paid out in cash. This also holds true for the fees granted to non-executive directors. The *bonus* awarded to directors is typically based on previous year's benchmarked performance measures. Bonuses usually comprise of an amount paid in cash (but are sometimes also paid in shares).[51]

The equity components of pay can be partitioned into stock options and restricted stock. Equity-based pay is typically the single largest component of remuneration. The fundamental idea behind option granting is "to encourage managers to undertake investments that increase shareholder wealth" (Geiler and Renneboog, 2011: 12). *Options* are usually issued at the money with a maturity of 10 years and are vested after 3 to 5 years. In the UK, the right to

[50] Von Eije and Megginson (2008) show that the dividend and share repurchase policies of European firms are similar to those of US firms.
[51] A bonus can be voluntarily deferred or mandatorily deferred for a typical vesting period of 3 years.

exercise an option is typically tied to meeting a certain performance threshold, usually formulated in terms of a strike price.[52]

Restricted stock is usually awarded as part of a Long-Term Incentive Plan which imposes conditions on the vesting, such as meeting specific firm performance criteria and the executive remaining employed at the firm throughout the entire vesting period. As long as the restricted shares are not vested, the executive cannot be considered the legal owner of the shares and no dividend is paid out.[53]

Miscellaneous compensation comprises transaction bonuses, deferred cash bonuses, compensation for loss of office, recruitment bonuses, and reallocation expenses. A transaction bonus is typically awarded if an executive director has managed a merger/acquisition. A deferred cash bonus is typically not performance-dependent but is awarded to retain a CEO or other executive director and to smooth the size of a bonus in a given year. A deferred cash bonus can also be converted into shares, which may help to align the interests of shareholders and executives. In addition, executives can be compensated for early dismissal. The basic idea behind golden parachutes is to incentivize the executive to maximize shareholder value without the concern for job loss. A recruitment bonus is to entice directors to sign a contract with the firm and when they sign relocation expenses are often paid. Other elements of pay comprise compensation for medical expenses and insurance costs. As the information available on pension contributions is far from complete, we have excluded it from our measure of total pay.

The composition of CEO remuneration is detailed in Table 3-4. The two most important compensation components for the CEO of a UK company are equity-based pay and the base salary, followed by the bonus payment. On average, a CEO is awarded a total compensation of about £590,000 a year, £270,000 (46%) of which stemming from equity-

[52] We use the Black Scholes approach to calculate the value of the options; wherefore we collect the market price and grant date from Datastream Advance. If we lack information on the maturity, we assume it to be 10 years. The risk-free rate is the 10 years UK government bond (GILT) rate.

[53] In some firms, equity-based remuneration is dividend-protected which can take place ex ante or ex post. In the latter case, the foregone dividend related to equity-based compensation is accumulated and paid out at the end of the contract. In the ex ante case, the share price is adjusted at the exercise of the option or the sale of the restricted stock. Note that over our time period, dividend corrections only occurred at some of the largest companies. The leading compensation consulting firms we have contacted taught us that firms have only recently started to correct the remuneration for dividends and the correction is contract specific and limited to the largest (mainly to some of the FTSE 100).

based pay, £180,000 (31%) stemming from base salary, and £110,000 (19%) stemming from bonus pay. The remaining 4% is the sum of fees, miscellaneous and other pay components.

[Insert Table 3-4, about here]

Figure 3-3 details the development of CEO remuneration over time: a first peak is visible in 2000, at the climax of the internet boom, but the level of remuneration is then significantly reduced as a consequence of the collapse of the equity and M&A markets. Interestingly, base salary stays almost constant during the entire sample period. The biggest increase can be found in the equity-based pay component, which increases from an average of £130,000 (34% of total pay) in 1996 to about £280,000 (43% of total pay) in 2007. Another strong increase can be seen in the bonus, which increases from an average of £62,846 (16.5% of total pay) in 1996 to £160,000 (25% of total pay) in 2007. It should be noted that CEO remuneration varies greatly with company size: FTSE100 firms pay a CEO on average more than twice the salary of an FTSE250 firm, about five times the salary of an FTSE Small Cap, and about 10 times that of an FTSE Fledgling. Also, equity-based pay is far more important in large firms: it amounts to 50% of total pay for a FTSE350 firm, 45% for an FTSE Small Cap, and 35% for an FTSE Fledgling.

[Insert Figure 3-3, about here]

3.4.4 Market Sentiment

In order to estimate whether the market prefers dividend payout as opposed to capital gains, we calculate the dividend premium, which is the logarithm of the average market-to-book ratio of dividend paying firms minus that of non-dividend payers (Baker and Wurgler, 2004a). The evolution of this market sentiment proxy is shown in Figure 3-4. The dividend premium has been negative during the late 1990s, which is in line with the results of Renneboog and Trojanowski (2011) who find that the dividend premium has been negative in the UK for most years between 1992 and 1998 and those of Denis and Osobov (2008b) who find a mostly negative dividend premium after 1996 and before 2000. The dividend premium then turns positive in 1999 and stays positive for the following few years, which corroborates the results of Denis and Osobov (2008b), who also observe a positive dividend premium for 2001 and 2002. From early 2000, the equity market strongly declines and investors were

willing to pay a premium on dividend-paying stock. In 2005 and 2006, the dividend premium strongly increases along with rising concerns about the development on the US housing market. Figure 3-4 demonstrates that there is little evidence of a systematic relation between the dividend premium and the propensity to pay dividends. This is again in line with the findings of Denis and Osobov (2008a), who report that there is little evidence for the catering hypothesis outside the US.

[Insert Figure 3-4, about here]

3.4.5 Ownership Concentration

We collected the ownership concentration (blocks of 3% for the outside shareholders and all shares held by insiders) from BoardEx, Manifest, and annual reports. We partition the shareholders into these categories: CEOs, other executive directors, non-executive directors, nominee accounts, financial institutions, individuals and families (not related to a director), and corporations. On average, outsiders own 31% of shares (through share blocks) whereas insiders accumulate an average of 7.5% of the share outstanding (see Table 3-5). The most influential categories of owner are financial institutions (19.7%), followed by corporations (7.9%) and executive directors (5.3%) Table 3-5 also shows that over time, total outsider ownership stayed rather constant, but insider ownership increased from 3.7% in 1998 to 7.5% in 2007, mostly because of equity-based compensation. A particular sharp increase can be seen from 1999 to 2000, when total insider ownership more than doubled.

[Insert Table 3-5, about here]

3.4.6 Taxation

The taxation regulation in relation to dividends and share repurchases has changed substantially during the last two decades. Corporations for instance are typically excluded from paying taxes on dividends that they receive from another company resident in the UK. Individual shareholders, however, are obliged to report these dividends as income and pay taxes on them (ICTA 1988, s14.1). This may obviously lead to double taxation: first at the company level and thereafter a second time at the individual level. For this reason, the UK

introduced an imputation system since 1973 that made it possible for shareholders to deduct the amount of taxes that had already been paid at the company level – the so called "imputation tax credit" (Bell and Jenkinson, 2002). Other entities, such as trusts, charities, and pension funds were tax-exempt, but have been able to claim the tax credit for a while (for a detailed account of the evolution of taxation, see Geiler and Renneboog, 2010).

In the case of share repurchases, corporations could generally forward imputation tax credits to shareholders for taxes paid by the company on the 'distribution element' of share buybacks. This distribution element is defined as the difference between the market value of the repurchased shares and the book value of the corresponding paid-in capital. It is important to note, however, that the sole repayment of capital does not form a distribution (Geiler and Renneboog, 2010). The tax treatment of share repurchases depends on the type of recipient: individuals selling their shares in an open-market repurchase are subject to capital gains tax on the amount exceeding their exemption.[54] Such exemption does not exist for corporate shareholders, who are subject to Corporation Tax.

In 1997, Pension funds could no longer be repaid the imputation tax credit paid on dividends. According to Bell and Jenkinson (2002: 1327) "U.K. pension funds saw an immediate 20 percent drop in the value of their net dividend income on U.K. equities." This cleared the way for another far-reaching change in the taxation regulations. In April 1999, the UK tax authorities abolished Advanced Corporation Tax, a decision that marked the return to a classical taxation system. Table 3-6 shows the differences in the taxation of both payout methods regarding various types of owners: Pension funds preferred dividends before 1997, when they turned tax-neutral concerning both dividends and share repurchases. While individuals have preferred share repurchases between 1996 and 2007, corporations (including financial firms) were more in favor of dividends.

[Insert Table 3-6, about here]

3.4.7 Corporate Governance and Control Variables

We include a number of control variables in our multivariate analysis: Tobin's Q, leverage, ROE, the variance of the cash flows, and past payout. We also include some

[54] Individuals who sell their stock in an open-market repurchase are required to pay capital gains tax of 18% (2010-11) on gains that exceed their personal exemption, which currently amounts to £10,100.

characteristics of the board and of the CEO: the average board comprises 9 directors, of which 5 are non-executives. The CEO's mean tenure and age are respectively 6 and 53 years. The CEO is mostly masculine – only in about 2% of all cases, we have a female CEO.

Corporate Law

In the UK, share buybacks and dividends are regulated by a combination of the Companies Act (CA) 2006, the Listing Rules of the London Stock Exchange (LSE), and the LSE's Model Code.[55] Buying back shares is limited to 15% of the shares outstanding (by means of a tender offer). Share repurchases need to be approved ex ante by a (special) shareholder resolution and the price to be paid should not be more than 5% above the price average of the previous five business days. The FSA Listing Rules demand the disclosure of the actual price and volume of every repurchase including the date as soon as possible and no later than 7:30 AM on the day after the transaction to the Company Announcement Office (CAO).[56]

Moreover, CA 2006 makes an important distinction between on-market repurchases and off-market repurchases. The former takes place on a recognized investment exchange (e.g. LSE, AIM) and is subject to a marketing arrangement[57], whereas the latter does not fulfill those criteria. Due to data availability, our analysis is based on-market share repurchases only.[58]

Since December 2003(CA 2006, Section 724) a company can purchase its own (qualified) shares out of distributable profits for future resale. In other words, while shares bought back before December 2003 had to be cancelled, they can now be kept for resale (or cancellation) at a later date or for employee stock option grants. Companies buying treasury shares may not exceed the upper maximum of 10% of the nominal value of the issued share capital and must neither exercise any right (including voting rights) nor make any distribution

[55] See Companies Act, 2006, ss. 690-692.
[56] *See* LSE Listing Rules, 15.9.
[57] Shares are deemed to be subject to a marketing arrangement if the firm disposes of facilities for trading in those shares without prior permission from the exchange and without a limit regarding the time during which these facilities are available (Ferran, 2008).
[58] In addition, the Listing Rules prescribe three buyback methods: (1) open market share repurchases, where shares are bought from current sellers, who are not aware that they are selling to the company, (2) proportional buybacks, where shares are bought from each shareholder in a set proportion, and (3) tender offers, where a fixed number of shares, which are set at a particular price, are bought from selected investors or from all shareholders. Detailed information to make this distinction is not available.

in respect of these shares. Share repurchases are much more heavily controlled in the UK than in the US, which may result in higher investor protection. The FSA Listing Rules stipulate a closed period during which a firm is prohibited to engage in share buybacks (FSA Handbook, LR 12).[59]

3.5 Empirical Results

We first discuss our quantile regression analysis on the level of payout and then turn to a multinomial regression analysis on the payout channel choice. To assess how a firm chooses between the different payout channels more in detail, we estimate nested logit models. Finally, we present robustness checks.

3.5.1 Level of Payout Regressions

How do the different components of CEO remuneration affect the level of corporate payout? In order to gain a more complete picture of the levels of payout, we perform quantile regressions on dividend payout and total payout at the 25th, 50th and 75th percentile (while controlling for taxation, market sentiment, firm characteristics as well as managerial attitudes such as optimism). The results of these tests are reported in Table 3-7 and Table 3-8.

[Insert Tables 3-7 and 3-8, about here]

We perform a quantile regression of our independent variables on dividend payout. Table 3-7 provides a full picture on the relation of our independent variables on dividend payout, adjusted for total assets, on the chosen percentiles. Both base salary and bonus are positively associated with dividend payout for the firms with the highest level of payout. The coefficients are 0.006 and 0.019, respectively. In other words, a 10% increase in base salary and bonus is associated with a corresponding increase in total payout of 6% and 19%, respectively. These findings are in line with the idea of incentive alignment: a higher base salary and bonus are associated with a higher dividend payout for the firms with the largest dividend payout. The variable for CEO stock options is persistently and significantly negatively related to dividend payout at the 1%-level of significance for the 25th and the 50th percentile, and at the 5%-level of significance for the 75th percentile. We find that a 10%

[59] This period starts the 60 days prior to the preliminary announcement of an annual or interim report, or, if shorter, the period from the relevant financial yearend up to and including the date of the announcement (The Companies (Model Articles) Regulations, 2008).

increase in the level of CEO stock options is associated with roughly a 1% decrease of dividend payout at the 25th percentile, a 0.7% decrease of dividend payout at the 50th percentile, and a 0.6% decrease of dividend payout at the 75th percentile. In other words, the negative effect of CEO stock options is smaller the larger the dividend payout of a firm. The observed reduction in the effect of stock options on the level of dividends may be due to the fact that larger firms tend to payout greater dividends (cf. Redding, 1997). This is in line with the idea that a firm with better prospects is more likely to signal its quality by issuing dividends. However, the negative relation between stock options and the dividend payout ratio is consistent with the managerial power idea as presented in hypothesis C1, according to which the payment of dividends is costly for CEOs holding stock options and should therefore lead to a lower dividend payout. For restricted stock, we find a negative but insignificant relation with the dividend payout ratio at all quantiles of payout, which fails to support Conjecture 1.

The corresponding results of a similar quantile regression on total payout over total assets are presented in Table 3-8. We find that some remuneration components are persistently significantly related to total payout at all three quantiles: e.g. base salary is positively associated with total payout at low, medium, and high levels of pay. The associated coefficients are 0.018, 0.057, and 0.223 at the low, medium, and high level of payout, respectively. That is, a 1% increase in base salary is associated with roughly a 1% rise of total payout for the firms with the lowest total payout and with a 22% rise of total payout for the firms with the largest total payout. Bonuses are also positively associated with total payout at both the medium and the high level. The coefficients are 0.044 and 0.075, respectively. Again, all coefficients are significant at the 1% level. In other words, the positive effect of bonuses is also larger the larger the total payout of a firm: a 1% increase in bonus is associated with a increase in total payout of roughly 8% for the firms with the largest total payout. Both the findings on base salary and on bonuses are in line with the idea of incentive alignment: a higher salary and a higher bonus are associated with a higher total payout. Interestingly, we find that stock options are negatively related to total payout at the 1%-level of significance. This supports our conjecture 1 that CEOs with significant stock options avoid payout. It is also in line with the finding by Sharma (2011), Cuny, Martin, and Puthenpurackal (2007), and Fenn and Liang (2001), who report a negative coefficient for stock options on total payout, albeit only significant at the 10%-level, but contrary to the findings of Hu and Kumar (2003), who

find that CEO compensation is not significantly related to the payout decision for the largest firms. Our coefficients indicate that a 50% increase in CEO stock options is associated with roughly a 5% decrease of total payout at the 25th percentile, a 10% decrease of total payout at the 50th percentile (MAD), and a 18% decrease in total payout at the 75th percentile. In other words, the negative effect of CEO stock options is greater the larger the total payout of a firm. This is contrary to the idea that a higher equity-based component of pay contributes to the alignment of interest between managers and shareholders and rather point towards the managerial power argument (cf. hypothesis C1). As a matter of fact, CEOs of companies with the largest payouts experience the strongest disincentive to return value to the company's shareholders due to a higher level of stock options. However, while we find the coefficients for restricted shares to be generally positive but insignificant, we show that the alignment problem can be alleviated, because an increase in restricted shares of 10% is associated with a 5% rise of total payout for the firms with the largest total payout. In other words, the restricted shares component of CEO pay is significantly related to total payout, but only for the firms with the largest payout.

Contrary to our expectations from conjecture 2, our results suggest a) non-executive ownership to be insignificantly related to both dividend payout over assets and total payout over assets, and b) individuals and families ownership to be positively and at the 25th percentile significantly (at the 5%-level) related to the dividend payout ratio. This corroborates the findings by Bhattacharyya, Elston, and Rondi (2011), that an increase in family control of a firm is positively associated with a higher dividend payout. In the case of total payout, we observe individuals and families ownership to be positively associated both at the 25th percentile and at the 75th percentile of payout and at the 5%- and the 10%-level of significance, respectively. In line with our expectations, we find industrial ownership to be persistently negatively related to dividend payout at all three percentiles of payout for both dividends/assets and total payout/assets. The latter results are significant at the 1%-level for both the 25th percentile of dividend payout and the 50th percentile of dividend payout, as well as for all three percentiles in case of total payout. This indicates that a 10% increase in industrial ownership is associated with roughly a 5% and 2% decrease in dividend payout at the 25th, and 50th percentile, respectively. In other words, we find strong evidence for the idea that the problem of asymmetric information between management and industrial ownership is reduced to the extent that the commitment mechanism of payout becomes unimportant for all

but the firms with the highest dividend payout ratio. Likewise, a 10% increase in industrial ownership is related to a 11%, 13%, and 16% decrease in total payout, respectively. These findings suggest that industrial ownership indeed reduces problems related to asymmetric information. In the presence of industrial ownership the commitment mechanisms of payout become less important. Consistent with Khan's (2006) results, we find that CEO ownership is negatively related to dividend payout (and total payout), in accordance with the idea that dividends are less valuable a control device in case of high managerial ownership.

Size is highly significantly and positively associated with higher dividend payout (and total payout) at all levels. The size measures indicate that larger firms tend to payout higher dividends, which is in line with the results of Redding (1997). Likewise, larger firms tend to make greater total payouts. Profitability is also persistently and positively related to dividend payout, but at a decreasing rate: while we find a 1% increase in ROA to be associated with a 67% increase at a low level of dividend payout, it is associated with an increase of only 17% at a high level of payout. This is not the case, however, for total payout over assets. In other words, an increase in profitability is broadly associated with a higher level of total payout but with a decreasing level of dividends. We also find free cash flow to be positively related to both low and high levels of dividend- and total payout. Again, a higher free cash flow is broadly associated with a higher total payout. But matters are different with regard to dividend payout: while a 1% higher free cash flow is associated with a 30% increase in dividend payout for the firms with the lowest dividend payout, a similar increase is associated with only a 13% increase in dividend payout for the firms with the highest dividend payout. In contrast, leverage is negatively associated with dividends at a low and median level of dividend payout and is negatively associated with total payout at all three levels. The corresponding coefficients for dividend payout of -0.29 and -0.15 are both significant at the 1% level. In other words, a 1% increase in leverage is associated with roughly a 30% decrease in dividend payout for firms with the lowest level of payout. The coefficients of free cash flow on total payout are -0.42, -0.69, and -0.48, respectively. Again, these coefficients are significant at the 5% or 1% level. That is, a 1% increase in leverage is associated with almost a 70% decrease in total payout for the firms with a medium payout. Consistent with our expectation that dividends are sticky, we find the dummy indicating that a firm has paid a dividend in the past to be a reliable predictor for the decision to pay dividends in the current period.

When comparing our findings from the MAD to the results of a random effects model and a Tobit regression (left-censoring limit at zero payout), we find that our results are largely upheld. In fact, the coefficients for our options variables from both our random effects model and our MAD are very similar. As expected, the coefficients from the non-linear Tobit model are different from the linear results of the other models and cannot be compared directly. In sum, our results suggest a statistically significant negative relation between CEO stock options and both dividend payout over assets and total payout over assets.

Particularly during the years 1999-2001 and when compared to the years 1997/1998, firms exhibit a lower tendency to pay dividends. This effect is strongest at a low level of payout, both in terms of size and significance (at the 5%-level). We observe that during these years, a company reduces its dividend distributions by about 15%, on average. At a median level of payout, this effect is reduced to about 6%. During this period, but also during the years 2002 to 2007 and at a high level of payout, dividends were reduced by about 8% and 9%, respectively. As for total payout, we observe a strong and persistently negative relation between the years 2002 to 2007 and total payout over assets. During this period, total payout is reduced by roughly 23%, 44%, and 69% at the low, median, and high level of payout, respectively. The corresponding coefficients are significant at the 1%-level.

3.5.2 Payout Channel Choice

How do the different components of pay affect the choice between the different payout channels? In order to answer this question and to reveal the relation between our conjecture on managerial power, taxation and market sentiment conjectures and the corporate payout decision, we estimate multinomial logit (and probit) models. Table 3-9 presents the details. Our dependent variable is the utility of the choice between (i) no payout, (ii) dividends, and (ii) share repurchases only or dividends and share repurchases combined. Base salary is both negatively associated with dividends and share repurchases vs. no payout, indicating that the utility of both payout channels decreases to a CEO with a higher base salary. The equity-based components of CEO pay are negatively and significantly associated with dividend payout. Both executive stock options and restricted shares decrease the utility of a CEO to choose for a firm to distribute dividends. The negative effect of stock options and restricted shares on the dividend versus no payout choice is significant at the 5%-level and 10%-level, respectively. Table 3-10 with the related marginal effects shows that a 10% increase in the level of CEO

stock options is associated with a decrease in dividend payout of roughly 2.2%. Likewise, a 10% increase in the level of restricted stock is associated with a decrease of roughly 0.9%. These findings are consistent with the idea that a CEO with higher equity-based components of pay avoids dividend payout (and prefers earnings retention) to avoid the negative effect on his stock option holdings stemming from the reduction in share price, associated with a dividend payment. Interestingly, we also find a positive and highly significant relation between CEO stock options and share repurchases (including the combination of dividends and share repurchases) relative to dividend payout. These results are significant at the 1%-level. The table with marginal effects details that a 10% increase in the level of CEO stock options is associated with roughly a 0.3% increase in share repurchases. This finding is in accordance with hypothesis C1, i.e. executive options can induce self-interested managers to favor repurchases over dividends. The results discussed above are in line with Fenn and Liang (2001), who observe that management stock options are both in a strong negative relation with dividends and in a positive relation with repurchases. They also corroborate the findings by Lambert et al. (1989) and Arnold and Gillenkirch (2002) that (in the absence of dividend protection) firms with a higher level of executive stock options have a lower dividend payout, which is only partly offset by share repurchases. In contrast to Jolls (1998), we find a negative and significant effect for the relation between restricted stock and dividend payout.

[Insert Tables 3-9 and 3-10, about here]

Concerning our expectations from hypothesis C2, we show a) a positive albeit not significant effect for the ownership of non-executive directors on the choices of dividends versus no payout and versus share repurchases, including the combination of dividends and share repurchases, b) a positive relation between individual and families ownership and dividend payout versus no payout, as well as a negative relation to share repurchases and the combination of dividends and share repurchases versus solely dividend payout. Put differently, individuals and families seem to exert a preference for dividends, which supports our hypothesis that they see dividends as a commitment mechanism that reduces the discretion of CEOs, and c) a negative and highly significant relation between the level of industrial ownership and the decision for dividends versus no payout, as well as of share repurchases versus no payout. In other words, a higher degree of industrial ownership is associated with a

tendency to retain earnings. This is consistent with our hypothesis H2a that non-institutional ownership of industrial firms is associated with a lower dividend payout. However, we cannot show empirical support for our hypothesis C2 that in case of payout, the ownership of industrial firms is positively associated with dividends. Likewise, we cannot provide evidence on the relation between institutional ownership and the payout channel choice. In relation to our hypothesis C2, i.e. that CEOs and executives prefer share repurchases over dividends, we can only provide partial evidence, by showing that CEO ownership is negatively related to the dividend choice at the 5%-level of significance.

Contrary to our tax hypothesis C3, which states that individuals and families prefer share repurchases to dividends, we find that individual and families ownership is negatively associated with the choice for share repurchases (and the combination of dividends and share repurchases) versus dividends. This result is significant at the 5%-level. Regarding the tax argument of hypothesis H2c, we show that industrial ownership is associated with both a lower dividend and a lower share repurchase, dividends and share repurchases payout versus no payout. This is contrary to our expectations.

Our sentiment conjecture C4 states that firms may cater towards a dividend clientele. We measure the "taste" for dividends by using the dividend premium. However, our results suggest that catering does not happen. In our sentiment hypothesis C4, we argue that a high trading volume over share outstanding may proxy for investor confidence and the interest in a growth stock. In line with our expectations, we show that a high trading volume is negatively related to dividend payout and positively related to share repurchases payout and the combination of share repurchases and dividends. Put differently, we find that CEOs may cater towards investor confidence by choosing share repurchases rather than solely dividends.

Again, our size variable FTSE100, our profit measure ROA and free cash flow over assets are positively related to both the decision for dividend payout and share repurchases payout. In other words, large and successful companies typically decide against retention. Interestingly, when deciding between no payout and share repurchases payout, the coefficients of all three variables become very large compared to no payout versus dividends. Being listed on the FTSE 250 and FTSE Small Cap is positively associated with the decision to payout dividends versus no payout, however, being listed on the latter index is negatively related to the decision for share repurchases payout, including the combination of dividends and share repurchases versus solely dividend payout. Growth opportunities, as measured by market-to-

book, are positively associated with the decision for dividends; leverage is negatively associated with the decision to payout share repurchases. Contrary to our expectations, we find that older CEOs favor dividends over both no payout and share repurchases. In fact, CEO age may proxy for firm age and we might therefore find a higher tendency towards dividends. More experienced CEOs favor both payout channels over no payout. When re-estimating the multinomial logit model by leaving out either salary/asset or bonus/assets, the results remain largely unaffected. In particular, the significance of the equity-based components of CEO pay is not affected. In sum, the fact that salary/assets and bonus/assets are highly correlated has no effect on our results.

In addition, we run the Hausman test to check whether the coefficients of a choice-restricted model are the same as the ones estimated above. The results suggest that the difference between the coefficients estimated is not systematic, i.e. there is no problem with IIA. In other words, no payout, dividends, and share repurchases in combination with dividends and share repurchases are independent alternatives.

We run our multinomial probit model on the same dataset. We estimate a log-likelihood of -1913.08, with a total of 4,376 observations on all payout alternatives. The results obtained from the multinomial probit are shown in detail in Table 3-11. In general, the multinomial probit regression provides strong support for the results obtained with the multinomial logit model. In particular, the coefficients are very close. Most importantly, our results for the remuneration variables are largely upheld: managerial stock options are negatively and significantly related to dividend payout and positively and significantly related with share repurchases, dividends and share repurchases at the 1%-level and 5%-level, respectively. Concerning the relation between restricted shares and the dividend payout, we find the coefficients to be very close, however the associated p-value gets insignificant.

[Include Table 3-11, about here]

Overall, we conclude that CEO stock options persistently and significantly affect the payout channel choice. In particular, we find that stock options decrease the CEO's utility to choose a dividend payout. Moreover, it increases a CEO's utility to choose share repurchases in a tradeoff with dividends. In addition, we find that share repurchases are

negatively associated with the decision for dividends versus no payout. In sum, we conclude that equity-based components of pay significantly affect corporate payout decision-making.

3.5.3 Nested Logit on the Choice of Payout Channel and Payout Policy

How does a firm choose between dividend payout and share repurchases (including the combination of dividends and share repurchases) given that it committed to payout in the first place? In order to learn more about the managerial power and ownership hypotheses, as well as the taxation and sentiment hypotheses, we rely on a nested logit model. Contrary to our earlier setup, we assume that a CEO first faces the decision concerning the appropriate level of payout, before he decides between dividends and share repurchases. The extra level of change in total payout, which is introduced by our structure of the nested logit model, offers additional insights. We assume a stable dividend policy to be the base case. Table 3-12 presents the details of this estimation method: it presents the coefficients for our independent variables and the payout channel choices: dividends and share repurchases at three different payout policies, namely increasing, decreasing, or keeping the level of payout stable. The results corroborate our earlier findings regarding our managerial stock option variable: we find a significantly negative relation between our options variable and the decision for dividend payout conditional on the decision to increase total payout as compared to the previous year. In other words, the utility of the decision to increase total payout by using the dividend channel is negatively affected by the level of managerial stock options. This result is statistically significant at the 10%-level. Likewise, we find a statistically significant and positive relation between CEO stock options and share repurchases, dividends and share repurchases, conditional on the decision to increase total payout compared to the previous year. This result is significant at the 5%-level. Both findings are consistent with our hypotheses C1. Interestingly, we find these results to hold only for firms that increase their level of total payout versus the previous period. Concerning a decreasing payout policy, we find a positive coefficient for dividends and a negative coefficient for share repurchases, and the combination of dividends and share repurchases, which are not significant.

Regarding our hypothesis C2, we show that a) in line with our expectations, a high level of ownership by non-executive directors is negatively related to the decision to issue dividends, supporting the idea that non-executive directors may want to avoid that the firm faces the scrutiny of the markets in case the firm has to attract new funding due to the dividend

payment, however, we do not find them to favor dividends over share repurchases. In fact, our results suggest that non-executive directors favor share repurchases over dividends in the case of firms that decided to increase their total level of payout versus the previous year. Also in the case of stable payout, our results indicates that non-executive director ownership is positively related to the payout of share repurchases and the combination of dividends and share repurchases, b) concerning individuals and families ownership, we find that it is negatively associated with share repurchases in the case of a stable payout policy, and c) the level of industrial ownership is negatively related with the decision to payout dividends, but positively related with the decision to payout share repurchases for the subsample of firms that decided to increase their total level of payout versus the previous year. In accordance with our expectations from hypothesis C2, we find the level of pension fund ownership to be positively correlated with dividend payout for both the subsample of firms increasing their total level of payout and those firms keeping their total level of payout stable.

Our tax hypothesis C3 suggests that executive- and non-executive directors, as well as individuals and families prefer share repurchases to dividends due to a higher after-tax value. Indeed, we find that non-executive ownership and executive ownership are positively related to share repurchases in the subsample of firms increasing the total level of payout. We find similar results for non-executive ownership and the subsample of firms that keep the total level of payout stables, as well as for executive ownership and the subsample of firms that decreases their total level of payout versus the previous period. As mentioned above, however, our findings concerning individual and family ownership are contradictory to these assumptions, as we find a negative relationship with share repurchases for the subsample of firms keeping their total level of payout stable. Our hypothesis C3 proposes the idea that corporations and financial institutions prefer dividends to share repurchases. As mentioned above, we find quite the contrary for the subsample of firms increasing their total level of payout: industrial ownership is negatively related to dividend payout and positively related to the decision for share repurchases, and the combination of dividends and share repurchases. We fail to find any significant relationship for institutional ownership and the payout decision in our nested logit setup. According to our hypothesis C4, we assume firms issue dividends if dividend-paying companies are higher valued by investors, as measured by the dividend premium. In contrast to this expectation, we find that the dividend premium is positively associated with share

repurchases for all subsamples of firms. In hypothesis C4 we propose that investor confidence as proxied for with the trading volume of a stock and momentum leads to a relative preference for share repurchases versus dividends. While we fail to find any significant relations between momentum and the payout decision in this setup, we show that trading volume over shares outstanding is in a negative relation with dividend payout for the subsample of firms increasing total payout, and in a positive relation with share repurchases and the combination of dividends and share repurchases for all subsamples of firms. In other words, CEOs seem to take the overconfidence of investors into account when deciding between dividends and share repurchases.

[Include Table 3-12, about here]

A limited number of coefficients for fees/assets and miscellaneous pay/assets in our result table are way off from what one would typically expect from such a regression. However, we think that the number of CEO observations for these particular variables are very restricted in the subsamples of firms that handle a decreasing or stable payout policy.

The results for the other independent variables are largely in line with our earlier results. Overall, we find that by applying the nested logit model to our dataset, we can gain additional insights regarding our earlier findings: managerial stock options are negatively related with dividend payout and positively related with share repurchases, conditional on the decision to payout and to increase the level of total payout compared to the previous year.

3.5.4 Robustness Checks

Endogeneity

A possible point of criticism is that performance may affect both total payout and remuneration. For instance, it may be reasonable for a successful company to make a high payout to its shareholders and to compensate the executives accordingly. In other words, remuneration may not be the cause of payouts, but firms with a greater payout capacity have chosen to pay more remuneration. If this is the case, the resulting coefficients may be biased because of endogeneity through omitted variables ("unobserved heterogeneity"). In order to deal with this possibility, we rely on the instrumental variable approach using a two-stage least squares estimation. We estimate our remuneration components (adjusted for the industry

mean) on return on equity (ROA) and market-adjusted return (FTSE All Share Index). Our results remain essentially unaffected.

CEO vs. All Executives

In our current regression setup, we focus on chief executive officers as single proxy for the most influential decision maker in a firm. In order to make our statements more robust, we rerun our models based on an average of all executive directors. While the results remain largely unaffected, the relation between executive stock options and the different payout choices becomes insignificant. From this we conclude, that the incentives from stock options are predominantly concentrated with chief executive officers.

Excluding Financial Companies

In our current sample, we include all firms listed on a UK stock exchange. That is, we do not exclude financial companies. While financial firms do often have a different asset structure and have to comply with different regulations, we re-estimate our current model in the absence of financial firms. Our results remain essentially the same.

Leaving Out Firms with Only Share Repurchases

When constructing the dependent variable, we referred to the following categories: (0) no payout, (1) dividends, and (2) share repurchases and combined payout, i.e. share repurchases and dividends. In order to test whether firms that solely engaged in repurchases affected the results, we removed them from the sample, i.e. we essentially focused on no payout, dividends, and combined payout. Again, our results were largely unaffected.

CEO and CEO Equivalents

When constructing the dataset based on information from Manifest, we found that some companies did not employ an executive director with the title of a CEO in each and every single year. Often these companies are rather small in size and effectively led by either a managing director or other senior executives. In the absence of a CEO for a certain firm-year combination, we constructed a CEO equivalent based on the highest-ranking executive available. While we do not rely on these CEO equivalents in our main regressions, we use

them as a robustness check. Entering the CEO equivalents into our regression does not change the results substantially.

Including Options Granted 1-Year Ago

Since we know that executive stock options for CEOs often become vested after 3-5 years, we include the lagged amount of stock options instead of the actual amount. Unfortunately, a lag of 3 years reduces our sample size by so many observations that we cannot run a regression on all our independent variables. However, we were able to run the same model with stock options lagged by one year. Again, the results remained largely stable, with a negative, albeit less significant, relation between executive stock options and the choice for dividends versus no payout. The choice for repurchases versus dividends, however, becomes insignificant.

3.6 Conclusion

Corporations rely on dividends, share repurchases and the combination of both payout methods to return value to their shareholders. Over the last decade, however, the once dominating payout method of dividends seems to go out of fashion with UK firms, with an increasing number of firms opting for share repurchases and the combination of share repurchases and dividends. We investigate the main determinants of the choice for a particular form of payout and take CEO remuneration into account, while correcting for ownership, taxation, sentiment and other determinants.

Our results suggest that there is a strict negative relation between the level of CEO stock options and both the size of dividend payout as well as the size of total payout of a firm. Our multivariate analysis indicates that both stock options and restricted shares decrease the utility of a CEO to choose for a dividend payout. At the same time, stock options seem to raise the utility a CEO derives from choosing share repurchases. From an in-depth analysis using a nested structure emerges that this holds particularly true for firms that decided to increase their level of total payout as compared to the previous year. These results support our managerial power hypothesis that the payment of dividends is costly to a CEO holding stock options and restricted stock and that the CEO therefore prefers a lower dividend payout and, in case of a payout, prefer share repurchases over dividends.

Our findings regarding ownership are more mixed: our results partially support the ideas that individuals and families see dividends as a commitment mechanism to reduce the discretion of the CEO, that high levels of industrial ownership alleviate the problem of asymmetric information to the extent that the commitment mechanism of payout becomes unimportant, in accordance with the first part of our hypothesis that non-institutional ownership prefers a lower dividend payout. While our expectations were that in the case of payout, non-institutional shareholders would choose for dividends rather than share repurchases, the results of our multivariate analysis suggest otherwise.

In line with our expectation, we find pension funds to choose dividends over share repurchases, as they prefer a steady source of income due to being tied-up by insider regulations and the need to rebalance their ownership portfolio. However, we cannot find evidence that this is the case for other institutional owners such as financial institutions.

Concerning our hypothesis that executives have a preference for share repurchases, because they give them more discretion about the payout and the stickiness of dividends, we can only provide mixed results: our results suggest that CEOs avoid dividend payout.

Our first tax hypothesis argues that executives, non-executive directors, as well as individuals and families prefer share repurchases to dividends due to a higher after-tax value. While we find that executives and non-executive directors prefer share repurchases in the case of firms increasing their total level of payout versus the previous year, we do not find this to be true for individuals and families. Likewise, we cannot show any show empirical support for our second tax hypothesis that corporations and financial institutions exert a preference for dividends.

Our sentiment hypothesis claims that firms issued dividends in the event of a positive dividend premium. Our results, however, suggest that this is not true. Rather, our findings indicate in line with the second part of our sentiment hypothesis, that CEOs cater towards investor confidence (as measured by high trading volume over shares outstanding) by choosing share repurchases over dividends.

Being noticed by researchers and the popular press alike, CEO compensation has grown tremendously in recent years, with the bulk of growth being in stock options and to a lesser degree in restricted stock. Financial economists have promoted equity-based pay in

general, and stock options in particular, as a means to realign the incentives of managers with those of shareholders.

However, we argue in line with Bebchuk et al. (2002) that a primary appeal of stock options may lie in the fact that they facilitate the extraction of rents from shareholders while at the same time provoking minimum outrage. Our empirical results are consistent with the managerial power argument that the payment of dividends is costly to CEOs holding stock options (and restricted stock) and therefore leads to a lower dividend payout – a fact that may partially be corrected by introducing dividend protection in option plans. While we find total CEO remuneration to be positively related to total payout and various payout channels, a closer investigation of the relation between the different components of pay and the level of total payout indicates that the option component of pay furthers a lower payout, which is contrary to the idea that a larger equity-based component of pay contributes to the alignment of interest between managers and shareholders. A detailed analysis of the different components of pay and the payout channel choice reveals that a 10% increase in the level of managerial stock ownership is associated with a decrease in the total amount of dividends paid out of 2.2%. Likewise, we find that the total amount paid out via share repurchases increases by only 0.26%. In sum, the option component of CEO pay does not alleviate the agency problem between CEO and shareholders, but leads to a decrease in total payout and a partial restitution of dividends by share repurchases that are beneficial to the CEO. This is consistent with two notions made by Fenn and Liang (2001), who report that options alter the composition of payout by discouraging the payment of dividends, but that there is no evidence that stock options are related to larger total payouts. In other words, managerial stock options persistently affect corporate payout decision-making as an effect of the CEO acting out of self-interest. Therefore, managerial stock options rather augment the differences between the interests of CEOs and shareholders with detrimental effects for the latter.

While we cannot show that executive officers can indeed affect the executive pay setting process to increase the amount of stock options awarded, we can show that they can influence corporate decisions to maximize their personal wealth. Therefore, we argue that the number of firms using share repurchases, possibly in combination with dividends, has risen due to the increasing option components of pay.

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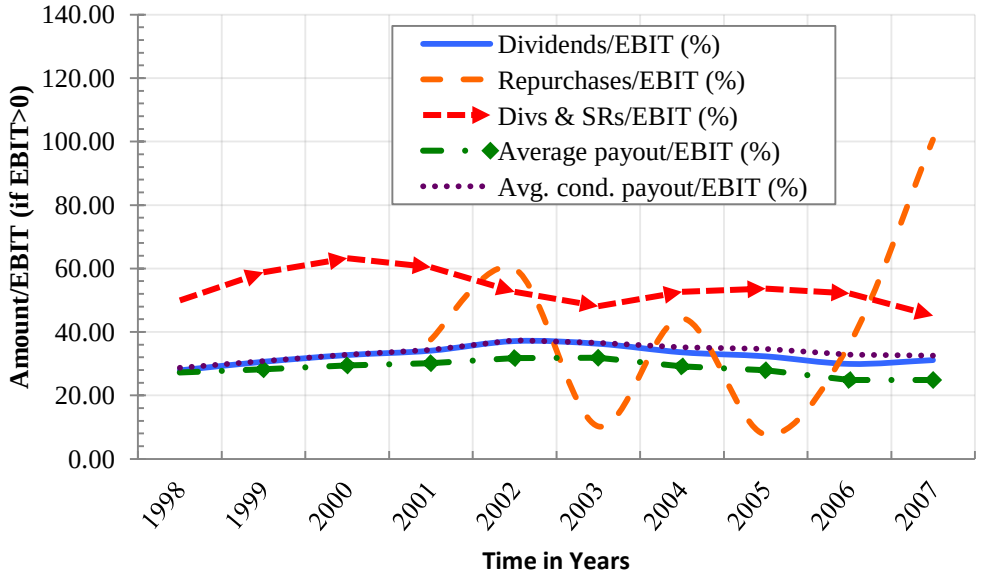
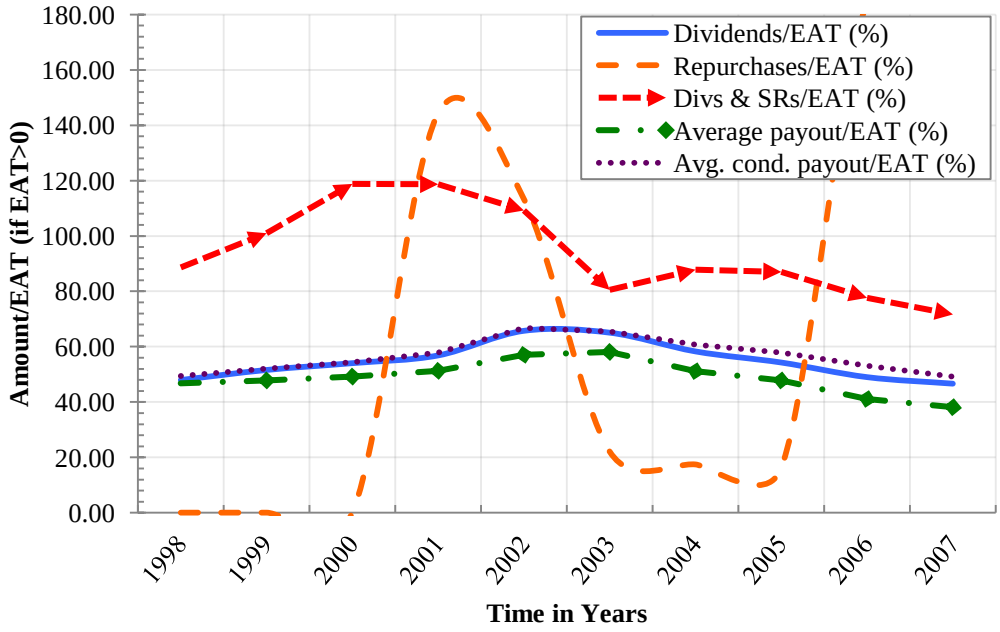
Figure 3-1 Payout Channels: Propensity to Pay.
Panel A:



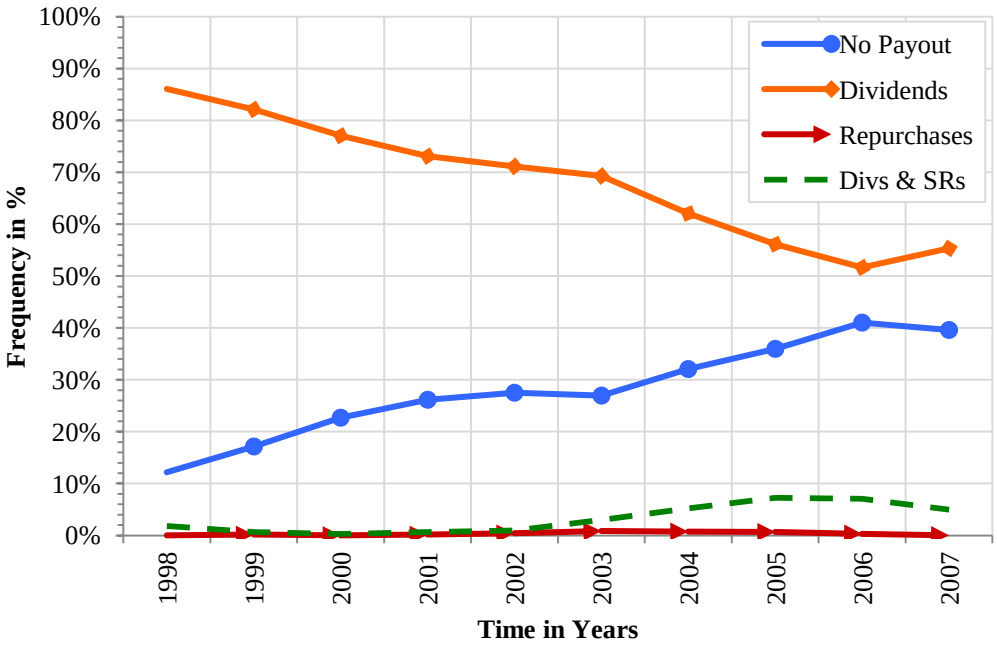
The figure shows the distributed funds over EBIT (if EBIT>0), winsorized at 5 and 95%. Average nominal payout is measured over all payout channels (frequency-weighted). Average conditional payout (over EBIT) gives the same figure conditional on payout. Sources: own calculations based on Datastream, Manifest, and Zephyr.

Panel B:



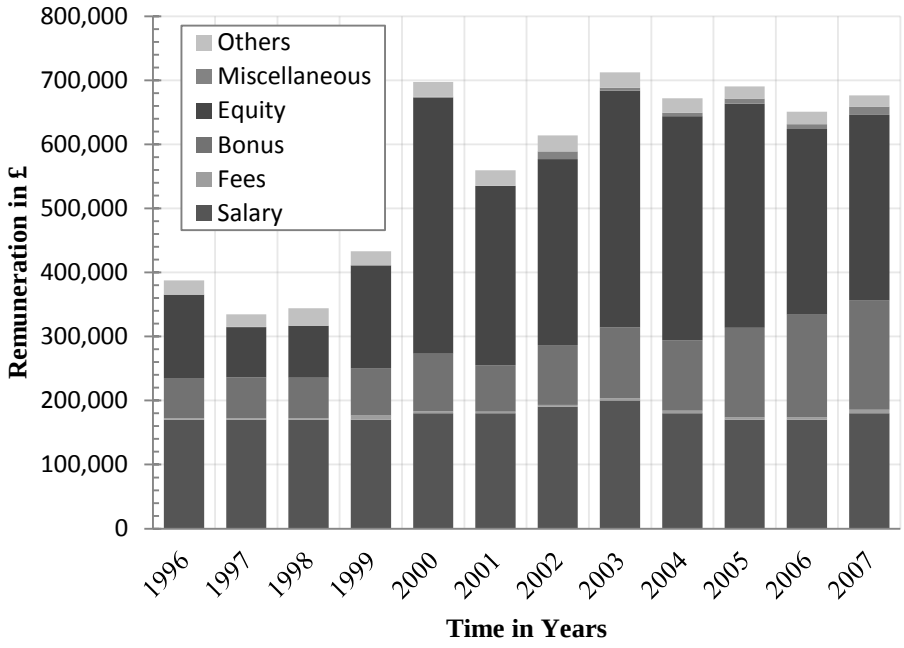
The figure shows the distributed funds over EAT (if EAT>0), winsorized at 5 and 95%. Average nominal payout is measured over all payout channels (frequency-weighted). Average conditional payout (over EAT) gives the same figure conditional on payout. Sources: own calculations based on Datastream, Manifest, and Zephyr.

Figure 3-2 The Evolution of Payout Channel Choice over Time.



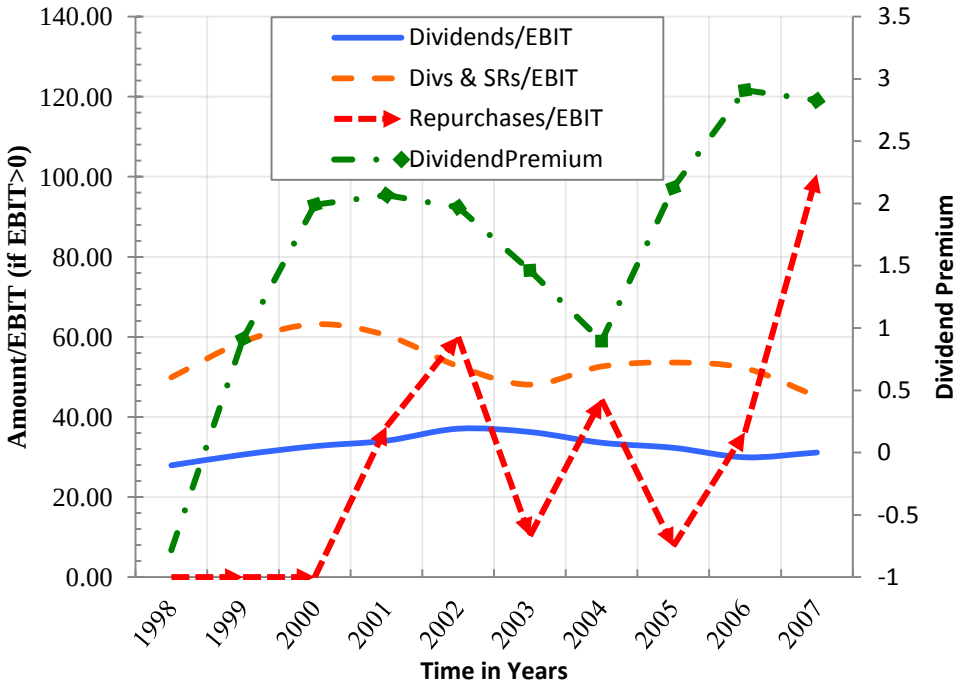
The figure presents the number of observations per payout channel: no payout, dividends, share repurchases, combined payout (i.e. both dividends and share repurchases) over time. Source: Datastream, Manifest, and Zephyr.

Figure 3-3 Average Composition of CEO Remuneration 1996-2007.



The figure shows the average level (in GBP) and mixture of the different components of CEO pay, as well as total pay over the years 1996-2007. The figures are unconditional, i.e. missing values are treated as zeros. The data are extracted from Boardex, Datastream, and Manifest.

Figure 3-4 The Dividend Premium.



The dividend premium is the difference between the natural log of the market-to-book ratio of dividend payers and that of non-payers (see right-hand side axis). Market-to-book is (marketcap of equity + book value of debt) / book value of total assets (Baker and Wurgler, 2004a). The data are extracted from Datastream, Manifest, and Zephyr.

Table 3-1 Conjectures and Predicted Influence.
The table shows the variables related to our hypotheses on managerial power, taxation, market sentiment, and other determinants, the predicted sign and the level of statistical significance from our analysis.

Variable	**Dividend Payout**		**Total Payout**	
Managerial Power	expected	evidence	expected	evidence
Stock Options (H1a)	-	-***	+/-	-***
Restricted Shares (H1a)	-	+/-	+/-	+
Non-executive ownership (H2a)	-	+/-	-	+/-
Individual & Families ownership (H2a)	-	+**	-	+*
Industrial ownership (H2a)	-	-***	-	-***
Return-on-assets	+	+***	+	+***
Free Cash Flow / Assets (t-1)	+	+***	+	+***
Market-to-book	+	+/-	+	+/-
Leverage (Debt/Assets)	-	-***	-	-***
Past Payout / Assets	+	+***	+	+***
Variable	**Div**		**SR/Div + SR**	
Managerial Power	expected	evidence	expected	evidence
Stock Options (H1b)	-	-**	+	+***
Restricted Shares (H1b)	-	-*	+	-
Non-executive ownership (H2a)	+	+	-	+
Institutional ownership (H2b)	+	-	-	-
Individual & Families ownership (H2a)	+	+**	-	-**
Industrial ownership (H2a)	+	-***	-	+
Pension fund ownership (H2b)	+	-	-	+
CEO ownership (H2c)	-	-**	+	+
Executive ownership (H2c)	-	+	+	-
Taxation				
Tax Period 1997-1998	+	+	-	+***
Tax Period 1999-2001	-	-	+	-***
Tax Period 2002-2007	+/-	-*	+/-	-
Executive ownership (H3a)	-	+	+	-
Non-executive ownership (H3a)	-	+	+	+
Individual & Families ownership (H3a)	-	+**	+	-**
Industrial ownership (H3b)	+	-***	-	+
Institutional ownership (H3b)	+	-	-	-
Sentiment				
Dividend Premium (t-1) (H4a)	+	-	-	+*
Trading Volume (H4b)	-	-**	+	+***
Momentum (t-1) (H4b)	-	+	+	+
Other Determinants				
Return-on-assets	-	+***	+	+***
Free Cash Flow / Assets (t-1)	-	+***	+	+***
Market-to-book	-	+***	+	-
Leverage (Debt/Assets)	+	+	-	-**
Past Payout / Assets	+	+	-	-
CEO age	+	+***	-	-**
CEO gender	-	+	+	-**
CEO tenure	-	+**	+	+
Dividend Surprise	+	-	-	+

Table 3-2 The Nested Logit Specification: Payout Channel Choice Based on Payout Policy.
The table details the different levels of the nested logit model. After opting to pay out funds, the first level is the payout policy choice (increase payout, keep payout stable, and decrease the payout) while the second level details which payout channel has been chosen: dividends (Div) or share repurchases (SR), dividends and share repurchases (Div & SR). The number of observations per nest and alternative are given in brackets.

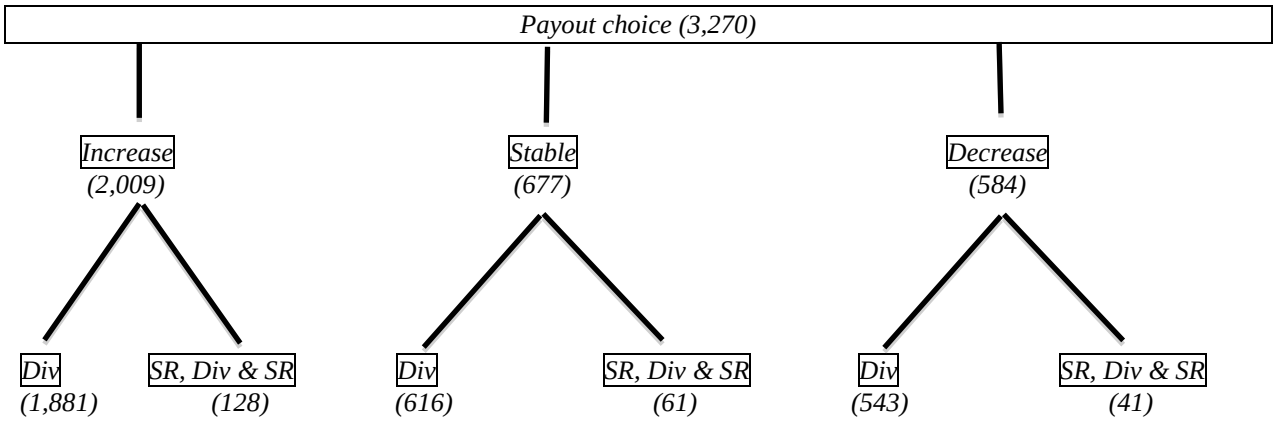


Table 3-3 Average Payout over Time.
The table shows the evolution of average payout of dividends, share repurchases, and the combination of both – adjusted for EBIT and winsorized at 5% - for the sample of firm-year observations in the years 1998-2007. The percentage over EBIT is given by payout channels – dividends, (share) repurchases, and dividends and share repurchases – and year. Also shown is the number of observation (#) for each payout channel and for the no-payout case. The column on the right gives the sample frequencies of a certain payout channel and the number of total observations. The Average payout/EBIT figure details the average amount paid out over EBIT over all payout channels in one year. The average conditional payout (over EBIT) gives the same figure conditional on payout. Also shown is the number of observations for each of these statistics.

Characteristic	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Sample
no payout/EBIT (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(#)	*(14)*	*(40)*	*(51)*	*(62)*	*(76)*	*(65)*	*(104)*	*(128)*	*(169)*	*(160)*	*(869)*
dividends/EBIT (%)	27.90	30.60	32.71	34.09	37.10	36.26	33.57	32.30	29.92	31.12	32.70
(#)	*(245)*	*(429)*	*(435)*	*(428)*	*(412)*	*(418)*	*(455)*	*(470)*	*(455)*	*(471)*	*(4218)*
repurchases/EBIT (%)	.	.	.	37.64	59.96	10.29	44.34	7.71	36.16	100.65	32.60
(#)	*(0)*	*(0)*	*(0)*	*(1)*	*(2)*	*(3)*	*(3)*	*(4)*	*(1)*	*(1)*	*(15)*
Divs & SRs/EBIT (%)	49.88	58.79	63.16	60.39	52.66	48.06	52.61	53.60	52.15	45.09	51.33
(#)	*(9)*	*(4)*	*(2)*	*(5)*	*(6)*	*(18)*	*(41)*	*(63)*	*(70)*	*(46)*	*(264)*
Average payout/EBIT (%)	27.18	28.25	29.42	30.10	31.70	31.85	29.13	27.95	24.89	24.83	*28.32*
Total (#)	*(268)*	*(473)*	*(488)*	*(496)*	*(496)*	*(504)*	*(603)*	*(665)*	*(695)*	*(678)*	*(5,366)*
Avg. cond. payout/EBIT (%)	28.68	30.86	32.85	34.40	37.43	36.57	35.20	34.62	32.89	32.49	*33.79*
Total (#)	*(254)*	*(433)*	*(437)*	*(434)*	*(420)*	*(439)*	*(499)*	*(537)*	*(526)*	*(518)*	*(4,497)*

Table 3-4 Composition of CEO Remuneration.
The table shows the different components of CEO pay in the sample from 1996 to 2007. The bold figures are unconditional statistics (missing values are treated as zeros), while the remaining figures are conditional (i.e. based on non-zero observations). The numbers of observations for sub-categories are actual observations, and do not necessarily add up to the respective total figure. The remuneration data are extracted from Manifest, share prices from Datastream (in GBP).

		N	Mean	S.D.	Minimum	0.25	Median	0.75	Maximum
Salary		**15693**	**180,000**	**200,000**	**0**	**0**	**140,000**	**270,000**	**2,400,000**
	Shares	8	21,412	27,830	2,993	2,999	5,000	41,374	69,554
	Cash	3,095	310,000	220,000	1,093	150,000	250,000	400,000	2,000,000
Fees		**15693**	**3,695**	**43,157**	**0**	**0**	**0**	**0**	**4,900,000**
	Shares	1	760,000	.	760,000	760,000	760,000	760,000	760,000
	Cash	678	32,276	50,456	504	19,000	23,000	29,602	1,000,000
Bonus		**15693**	**110,000**	**330,000**	**0**	**0**	**0**	**97,787**	**10,000,000**
	Shares	64	270,000	500,000	2,997	67,670	120,000	240,000	3,100,000
	Cash	6,992	220,000	400,000	130	50,000	110,000	240,000	10,000,000
	Bonus vdf	72	300,000	310,000	6,445	91,000	170,000	420,000	1,300,000
	Bonus mdf	377	390,000	560,000	2,296	90,000	190,000	460,000	4,400,000
Equity		**15693**	**270,000**	**2,900,000**	**0**	**0**	**0**	**42,300**	**280,000,000**
	Options	2,407	730,000	6,300,000	0	86,657	200,000	430,000	280,000,000
	Restricted Stock	2,605	960,000	3,300,000	3	140,000	350,000	780,000	94,000,000
Miscellaneous		**15693**	**5,370**	**91,969**	**0**	**0**	**0**	**0**	**6,300,000**
	Transaction bonus	19	750,000	1,200,000	25,014	77,208	160,000	890,000	4,700,000
	deferred cash bonus	73	340,000	800,000	573	71,000	150,000	300,000	6,300,000
	loss of office	80	440,000	550,000	20,775	160,000	300,000	450,000	3,400,000
	recruitment bonus	30	750,000	1,500,000	4,556	87,500	290,000	600,000	6,400,000
	relocation expenses	29	130,000	170,000	5,000	36,813	70,000	130,000	770,000
Others		**15693**	**21,603**	**95,909**	**0**	**0**	**6,000**	**18,000**	**6,600,000**
Total		**15693**	**590,000**	**3,000,000**	**0**	**15,000**	**200,000**	**530,000**	**280,000,000**

Table 3-5 Ownership Concentration over Time.
The table details the percentage of ownership concentration over time. The table distinguishes between insiders (CEOs, executives, and non-executive directors), and outside owners (such as nominee accounts, financial institutions (banks, insurance companies, investment trusts and pension funds), individuals and families, as well as corporations). The last row shows the total number (#) of observations; the last column details the average values over the sample period. The data are extracted from Boardex, Manifest and annual reports.

Characteristic	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
CEO	1.35	1.60	3.16	3.37	3.35	3.01	2.80	2.92	3.32	2.68	2.76
Executive directors (excl. CEO)	1.35	1.64	3.44	3.41	3.07	2.52	2.26	2.16	2.55	2.60	2.50
Non-executive directors	1.03	1.07	2.47	2.67	2.94	2.45	2.64	2.36	2.44	2.66	2.27
Insider Total	**3.73**	**4.30**	**9.06**	**9.45**	**9.36**	**7.97**	**7.70**	**7.44**	**8.31**	**7.94**	**7.53**
Nominee accounts	0.48	0.97	1.02	1.15	0.96	0.84	1.05	1.26	1.75	1.90	1.14
Institutions	18.31	18.25	19.99	19.49	20.06	22.13	18.44	18.73	20.24	21.65	19.73
Banks	3.12	2.76	1.52	1.05	1.21	1.56	1.44	1.69	1.68	1.81	1.78
Insurance companies	6.58	5.65	6.34	4.38	3.53	3.27	2.48	2.31	2.17	2.21	3.89
Investment trusts	8.41	9.65	11.91	13.77	15.09	16.96	14.09	14.36	16.03	17.24	13.75
Pension funds	0.19	0.19	0.22	0.30	0.23	0.33	0.42	0.38	0.36	0.39	0.30
Individuals & Families	4.75	3.23	1.66	1.70	1.86	1.98	1.76	1.52	1.37	1.52	2.14
Corporations	11.38	8.88	9.17	7.05	7.03	7.02	6.38	6.41	7.47	8.81	7.96
Outsider Total	**34.92**	**31.33**	**31.84**	**29.40**	**29.91**	**31.96**	**27.63**	**27.91**	**30.83**	**33.87**	**30.96**
Total	348	540	631	742	759	772	894	1,001	1,061	1,052	7,800

Table 3-6 The Payout Preferences of Major Shareholder Types by Tax Regime.
The table differentiates between six tax regimes and indicates the payout preferences by type of shareholder (individuals, pension funds, corporations). SR refers to share repurchases. While individuals should always prefer off-market share repurchases, corporations value the after-tax value of dividends the most. Pension funds' preferences change from dividends to no preference in July 1997. Source: own calculations and Geiler and Renneboog (2010)

Regimes	**Individuals**	**Pension funds**	**Corporations**
Prior to 1994	Share repurchases	Dividends	Dividends
1994-1996	Share repurchases	Dividends, Share repurchases	Dividends
1996-1997	Share repurchases	Dividends	Dividends
Since July, 1997	Share repurchases	Neutral	Dividends
Since April, 1999	Share repurchases	Neutral	Dividends
Since 2003	Share repurchases	Neutral	Dividends

Table 3-7 Quantile Regressions on Dividends/Assets

The table presents three quantile regressions on dividends over assets at the 25th, 50th, and 75th percentile at the CEO level. The table shows the coefficients and p-values, as well as the significance of the results at the 10%, 5%, or 1% level, denoted with *, **, and ***, respectively. The independent variables are shown on the left hand side and include remuneration, ownership, taxation, sentiment and other determinants. Total indicates the total number of observations. The coefficients are transformed by multiplying them with 10^2. Data are extracted from Datastream, Manifest, and Zephyr.

	25th percentile		50th percentile		75th percentile	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Remuneration						
Salary/Assets	0.00469*	0.055	0.00120	0.263	0.00608***	0.000
Bonus/Assets	0.00234	0.739	0.00301	0.375	0.01947***	0.000
Fees/Assets	-0.17796***	0.010	-0.02777	0.481	-0.02544	0.655
Option/Assets	-0.00101***	0.000	-0.00068***	0.007	-0.00058**	0.032
Restricted Stock/Assets	-0.00027	0.599	0.00000	0.995	-0.00016	0.727
Miscellaneous/Assets	0.00529	0.554	0.00042	0.926	-0.00336	0.507
Other/Assets	-0.06015***	0.000	-0.00040	0.936	-0.00037	0.949
Ownership						
CEO ownership	-0.00561***	0.000	-0.00165**	0.030	-0.00150	0.204
Non-executive ownership	0.00025	0.862	0.00039	0.607	-0.00058	0.609
Executive ownership (excl. CEO)	0.00092	0.616	-0.00023	0.781	0.00161	0.184
Institutional ownership	-0.00105	0.143	-0.00016	0.639	0.00032	0.541
Individual & Families ownership	0.00539**	0.011	0.00077	0.443	0.00128	0.368
Industrial ownership	-0.00561***	0.000	-0.00188***	0.000	-0.00095	0.147
Pension fund ownership	-0.00120	0.865	-0.00410	0.237	-0.00281	0.583
Taxation						
Tax Period 1999-2001	-0.14698**	0.025	-0.06299*	0.054	-0.08445*	0.085
Tax Period 2002-2007	-0.10300	0.117	-0.03194	0.326	-0.09324*	0.055
Sentiment						
Dividend Premium	-0.02169	0.108	-0.01246*	0.064	-0.00931	0.359
Trading Vol. /Sh. Out	0.00087***	0.000	0.00012***	0.007	0.00004	0.601
Momentum (t-1)	-0.49110	0.132	-0.31013*	0.053	-0.39820*	0.089
Other Determinants						
FTSE100	0.32314***	0.000	0.13433***	0.000	0.14774***	0.000
FTSE250	0.15994***	0.000	0.06306***	0.000	0.09337***	0.000
FTSE Small Cap	0.08343***	0.003	0.02366*	0.079	0.04608**	0.022
ROA	0.67295***	0.000	0.15103***	0.000	0.17330***	0.001
Free Cash Flow/Assets (t-1)	0.29508***	0.000	0.05281	0.120	0.13056**	0.022
Market-to-book	-0.00025	0.518	0.00002	0.920	0.00028	0.451
Debt/Assets	-0.29086***	0.000	-0.15843***	0.000	-0.07135	0.133
Var(CF)	0.00374	0.436	0.00270	0.235	0.00385	0.229
Past Dividend/Assets	50.65847***	0.000	86.51803***	0.000	96.87649***	0.000
Boardsize	0.00477	0.309	0.00433*	0.071	0.00415	0.262
Female (%)	0.08203	0.598	0.02653	0.734	0.09360	0.414
CEO gender	-0.00085	0.992	-0.06265	0.138	-0.10022	0.107
CEO age	0.00671***	0.000	0.00313***	0.000	0.00114	0.365
CEO tenure	0.00642***	0.001	0.00251**	0.010	0.00209	0.165
Dividend Surprise	0.00000	0.998	-0.00002	0.445	-0.00010**	0.013
Constant	0.28187*	0.082	0.08719	0.279	0.34222***	0.004
Pseudo R-squared	0.279		0.464		0.509	
Industry dummies	Yes		Yes		Yes	
Number of observations	4385		4385		4385	

Table 3-8 Quantile regressions on Total Payout/Assets.
The table presents three quantile regressions on total payout over assets at the 25th, 50th, and 75th percentile at the CEO level. The table shows the coefficients and p-values, as well as the significance of the results at the 10%, 5%, or 1% level, denoted with *, **, and ***, respectively. The independent variables are shown on the left hand side and include remuneration, ownership, taxation, sentiment and other determinants. The coefficients are transformed by multiplying them with 10^2. Data are extracted from Datastream, Manifest, and Zephyr.

	25th percentile		50th percentile		75th percentile	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Remuneration						
Salary/Assets	0.01828***	0.000	0.05735***	0.000	0.22313***	0.000
Bonus/Assets	0.00699	0.516	0.04486***	0.002	0.07595***	0.001
Fees/Assets	-0.12227	0.161	0.26805*	0.078	0.10869	0.695
Option/Assets	-0.00111***	0.006	-0.00218***	0.000	-0.00358***	0.001
Restricted Stock/Assets	0.00010	0.905	0.00022	0.880	0.00524**	0.024
Miscellaneous/Assets	0.00232	0.876	0.00029	0.986	-0.02434	0.349
Other/Assets	-0.10227***	0.000	-0.04594**	0.027	-0.06408**	0.020
Ownership						
CEO ownership	-0.01143***	0.000	-0.01147***	0.000	-0.00642	0.260
Non-executive ownership	-0.00111	0.610	0.00328	0.285	0.00694	0.255
Executive ownership (excl. CEO)	-0.00042	0.869	-0.00036	0.918	-0.00240	0.707
Institutional ownership	-0.00131	0.241	-0.00046	0.744	0.00180	0.472
Individual & Families ownership	0.00771**	0.014	0.00608	0.141	0.01140*	0.087
Industrial ownership	-0.01121***	0.000	-0.01327***	0.000	-0.01604***	0.000
Pension fund ownership	0.00010	0.993	-0.03291**	0.021	-0.04715*	0.076
Taxation						
Tax Period 1999-2001	-0.14915	0.142	-0.28636**	0.033	-0.44433*	0.066
Tax Period 2002-2007	-0.22712**	0.026	-0.43661***	0.001	-0.69137***	0.004
Sentiment						
Dividend Premium	-0.04360**	0.037	-0.03253	0.241	0.01760	0.725
Trading Vol. /Sh. Out	0.00279***	0.000	0.00415***	0.000	0.00380***	0.000
Momentum (t-1)	-0.40185	0.422	-0.30209	0.647	-0.93199	0.418
Other Determinants						
FTSE100	0.49560***	0.000	0.71149***	0.000	1.42991***	0.000
FTSE250	0.27127***	0.000	0.33505***	0.000	0.76405***	0.000
FTSE Small Cap	0.09951**	0.024	0.17927***	0.001	0.45390***	0.000
ROA	1.47855***	0.000	1.94562***	0.000	2.81978***	0.000
Free Cash Flow/Assets (t-1)	2.01504***	0.000	3.81399***	0.000	5.22439***	0.000
Market-to-book	-0.00027	0.662	-0.00017	0.855	0.00178	0.306
Debt/Assets	-0.42197***	0.000	-0.69596***	0.000	-0.48355**	0.050
Var(CF)	0.01682**	0.030	0.02881***	0.002	0.01705	0.293
Past Payout/Assets	0.00126***	0.000	0.00085***	0.000	0.00014	0.253
Boardsize	0.02813***	0.000	0.02376**	0.016	0.01959	0.285
Female (%)	0.49753**	0.043	1.07777***	0.001	2.99536***	0.000
CEO gender	-0.40179***	0.002	-0.53374***	0.002	-0.31822	0.300
CEO age	0.01369***	0.000	0.01383***	0.000	0.01604**	0.011
CEO tenure	0.00927***	0.002	0.00993**	0.014	0.01253*	0.093
Dividend Surprise	-0.00001	0.935	-0.00012	0.286	-0.00041**	0.035
Constant	0.94157***	0.000	1.86644***	0.000	1.39115**	0.025
Pseudo R-squared	0.172		0.190		0.169	
Industry dummies	Yes		Yes		Yes	
Number of observations	4376		4376		4376	

Table 3-9 Multinomial Logit on the Payout Channel Choice.

This table presents a multinomial logit regression of the payout channel choice on remuneration, ownership, taxation, sentiment and other determinants. Panel A assumes no payout as the base category and presents the results for dividends and the combined payout choice (share repurchases, dividends & share repurchases). Panel B assumes dividend payout as base category. Standard errors are clustered on a firm level. A Hausman Test reveals that the differences in coefficients of the full model and a restricted version are not systematic, i.e. the results do not suffer from IIA. The data are extracted from Datastream, Manifest, and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Remuneration						
Salary/Assets	-0.065***	0.006	-0.215**	0.023	-0.152	0.155
Bonus/Assets	-0.030	0.416	-0.130	0.265	-0.138	0.281
Fees/Assets	-0.309	0.262	-13.833	0.584	-14.616	0.633
Option/Assets	-0.023**	0.010	0.001	0.706	0.052***	0.006
Restricted Stock/Assets	-0.010*	0.077	-0.033	0.200	-0.013	0.348
Miscellaneous/Assets	-0.128	0.467	-0.123	0.715	0.164	0.440
Other/Assets	-0.117*	0.063	-0.065	0.456	0.066	0.226
Ownership						
CEO ownership	-0.021**	0.031	-0.019	0.144	0.001	0.933
Non-executive ownership	0.000	0.975	0.001	0.949	0.001	0.938
Executive ownership (excl. CEO)	0.012	0.281	0.002	0.931	-0.010	0.712
Institutional ownership	-0.004	0.332	-0.009	0.241	-0.005	0.476
Individual & Families ownership	0.028**	0.050	-0.029	0.285	-0.054**	0.034
Industrial ownership	-0.025***	0.000	-0.021**	0.023	0.004	0.588
Pension fund ownership	-0.001	0.978	0.036	0.590	0.033	0.566
Taxation						
Tax Period 1999-2001	-0.426	0.230	-3.139***	0.000	-2.682***	0.000
Tax Period 2002-2007	-0.723*	0.054	-0.833	0.101	-0.057	0.878
Sentiment						
Dividend Premium	-0.062	0.308	0.091	0.384	0.148*	0.099
Trading Vol. /Sh. Out	-0.170**	0.011	0.019***	0.000	0.247***	0.003
Momentum (t-1)	0.402	0.768	0.771	0.761	0.648	0.780
Other Determinants						
FTSE100	1.114**	0.017	2.117***	0.000	1.059***	0.002
FTSE250	0.669***	0.002	0.474	0.107	-0.153	0.495
FTSE Small Cap	0.406**	0.016	-0.168	0.572	-0.566**	0.043
ROA	3.843***	0.000	8.906***	0.000	4.714***	0.000
Free Cash Flow/Assets (t-1)	8.280***	0.000	9.311***	0.000	2.428**	0.048
Market-to-book	0.006***	0.004	0.003	0.512	-0.003	0.285
Debt/Assets	0.600	0.302	-0.682	0.375	-1.380**	0.017
Var(CF)	0.053	0.112	0.032	0.540	-0.025	0.544
Past Payout	0.012	0.712	0.006	0.862	-0.010	0.528
Boardsize	0.041	0.245	0.040	0.482	-0.004	0.935
Female (%)	0.616	0.590	0.783	0.612	0.196	0.874
CEO gender	0.344	0.449	-0.737	0.237	-1.108**	0.043
CEO age	0.037***	0.001	0.006	0.715	-0.032**	0.013
CEO tenure	0.044**	0.011	0.049**	0.047	0.011	0.556
Dividend Surprise	-0.002	0.144	0.001	0.140	0.027	0.213
Log-Likelihood		-1879.718			-653.534	
R-squared		0.609			0.721	
Industry dummies		Yes			Yes	
Number of observations		4376			3386	

Table 3-10 Marginal Effects of the Multinomial Logit Model.

The table presents the marginal effects of the multinomial logit regression of the payout channel choice on remuneration, ownership, taxation, sentiment, and other determinants. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest, and Zephyr. The marginal effects are calculated using the DMLOGIT2 Stata module as provided by Bill Sribney.

	Panel A: Base Outcome is no payout						**Panel B:** Base Outcome is dividends		
	Dividends			SR/Dividends + SR			SR/Dividends + SR		
	Coefficient	Std. Err.	p-value	Coefficient	Std. Err.	p-value	Coefficient	Std. Err.	p-value
Remuneration									
Salary/Assets	-0.00583	0.00231	0.01200	-0.00034	0.00021	0.10200	-0.00045	-0.00045	0.30100
Bonus/Assets	-0.00269	0.00335	0.42100	-0.00027	0.00034	0.42400	-0.00070	-0.00070	0.27200
Fees/Assets	0.04754	0.07668	0.53500	-0.08606	0.08024	0.28300	-0.15747	-0.15747	0.25100
Option/Assets	-0.00224	0.00088	0.01100	0.00007	0.00004	0.05300	0.00026	0.00026	0.01400
Restricted Stock/Assets	-0.00085	0.00052	0.10400	-0.00006	0.00007	0.36000	-0.00005	-0.00005	0.43900
Miscellaneous/Assets	-0.01189	0.01545	0.44100	-0.00010	0.00078	0.89400	0.00089	0.00089	0.43800
Other/Assets	-0.01039	0.00574	0.07000	0.00004	0.00021	0.84000	0.00012	0.00012	0.66600
Ownership									
CEO ownership	-0.00195	0.00092	0.03900	0.00000	0.00004	0.95500	0.00000	0.00007	0.96100
Non-executive ownership	-0.00004	0.00087	0.99300	0.00001	0.00004	0.74200	0.00002	0.00006	0.70200
Executive ownership (excl. CEO)	0.00107	0.00105	0.31200	-0.00002	0.00007	0.82200	-0.00003	0.00013	0.81000
Institutional ownership	-0.00043	0.00038	0.28900	-0.00001	0.00002	0.78000	-0.00001	0.00003	0.87700
Individual & Families ownership	0.00257	0.00131	0.04700	-0.00016	0.00009	0.07900	-0.00027	0.00014	0.05400
Industrial ownership	-0.00235	0.00056	0.00000	0.00001	0.00002	0.66600	0.00003	0.00004	0.38500
Pension fund ownership	-0.00001	0.00367	0.96500	0.00008	0.00017	0.62500	0.00011	0.00028	0.68800
Taxation									
Tax Period 1999-2001	-0.05388	0.03298	0.14200	-0.00692	0.00263	0.00900	-0.01066	0.00326	0.00100
Tax Period 2002-2007	-0.08734	0.03503	0.01500	0.00099	0.00148	0.50200	0.00247	0.00244	0.31000
Sentiment									
Dividend Premium	-0.00551	0.00556	0.19800	0.00040	0.00030	0.18200	0.00063	0.00046	0.16700
Trading Vol. /Sh. Out	-0.01640	0.00690	0.02100	0.00054	0.00028	0.05300	0.00128	0.00052	0.01400
Momentum (t-1)	0.02656	0.12427	0.75300	0.00159	0.00683	0.81600	0.00345	0.01144	0.76300
Other Determinants									
FTSE100	0.09914	0.04021	0.01000	0.00377	0.00160	0.01800	0.00585	0.00201	0.00400
FTSE250	0.06004	0.01995	0.00300	0.00012	0.00065	0.85000	0.00012	0.00108	0.91200
FTSE Small Cap	0.03611	0.01512	0.01300	-0.00100	0.00087	0.24700	-0.00170	0.00140	0.22500
ROA	0.33139	0.08304	0.00000	0.01827	0.00551	0.00100	0.02696	0.00817	0.00100
Free Cash Flow/Assets (t-1)	0.74332	0.13538	0.00000	0.00727	0.00394	0.06500	0.01500	0.00660	0.02300
Market-to-book	0.00055	0.00019	0.00400	-0.00001	0.00001	0.47700	-0.00001	0.00002	0.34600
Debt/Assets	0.05269	0.05268	0.27300	-0.00266	0.00176	0.13200	-0.00503	0.00288	0.08100
Var(CF)	0.00570	0.00322	0.19400	-0.00024	0.00013	0.07100	-0.00046	0.00022	0.03900
Past Payout	0.00109	0.00287	0.68900	-0.00002	0.00004	0.61200	-0.00007	0.00008	0.40400
Boardsize	0.00288	0.00325	0.36100	0.00011	0.00014	0.41800	0.00017	0.00022	0.44100
Female (%)	0.04095	0.10424	0.69000	0.00278	0.00349	0.42600	0.00436	0.00592	0.46100
CEO gender	0.00547	0.04740	0.84300	0.00073	0.00200	0.71500	0.00139	0.00342	0.68400
CEO age	0.00282	0.00116	0.01700	0.00003	0.00004	0.53500	0.00004	0.00007	0.55600
CEO tenure	0.00394	0.00151	0.00500	0.00002	0.00005	0.73000	0.00003	0.00008	0.73100
Dividend Surprise	-0.00017	0.00012	0.34000	0.00001	0.00000	0.08100	0.00013	0.00010	0.20500
Log-Likelihood			-1865.212				-638.583		
R-squared			0.417				0.259		
Industry dummies			Yes				Yes		
Number of observations			4376				3386		

Table 3-11 Multinomial Probit on the Payout Channel Choice.

This table presents a multinomial probit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on remuneration, ownership, taxation, sentiment and other determinants. Panel A assumes no payout as the base category and presents the results for dividends and the combined payout choice (share repurchases, dividends & share repurchases). Panel B assumes dividend payout as base category. White correction for standard errors is used. The data are extracted from Datastream, Manifest, and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Remuneration						
Salary/Assets	-0.054***	0.001	-0.093**	0.045	-0.07000	0.244
Bonus/Assets	-0.01300	0.661	-0.08600	0.179	-0.10600	0.191
Fees/Assets	-0.22400	0.322	-8.12700	0.583	-7.61900	0.708
Option/Assets	-0.020***	0.004	0.00000	0.745	0.034**	0.019
Restricted Stock/Assets	-0.00800	0.130	-0.03100	0.245	-0.00800	0.381
Miscellaneous/Assets	-0.281*	0.073	-0.18100	0.395	0.14300	0.269
Other/Assets	-0.083*	0.093	-0.03300	0.485	0.05200	0.257
Ownership						
CEO ownership	-0.018**	0.012	-0.01400	0.111	0.00200	0.799
Non-executive ownership	0.00000	0.954	0.00300	0.787	0.00200	0.810
Executive ownership (excl. CEO)	0.00700	0.388	0.00000	0.992	-0.00600	0.709
Institutional ownership	-0.00200	0.466	-0.00400	0.354	-0.00200	0.595
Individual & Families ownership	0.021**	0.027	-0.01700	0.262	-0.036**	0.019
Industrial ownership	-0.021***	0.000	-0.016***	0.008	0.00300	0.549
Pension fund ownership	-0.00100	0.967	0.02300	0.569	0.01900	0.656
Taxation						
Tax Period 1999-2001	-0.34200	0.168	-1.979***	0.000	-1.745***	0.000
Tax Period 2002-2007	-0.588**	0.026	-0.678**	0.041	-0.09700	0.708
Sentiment						
Dividend Premium	-0.05000	0.264	0.03800	0.574	0.09600	0.112
Trading Vol. /Sh. Out	-0.145***	0.005	0.010***	0.000	0.221***	0.001
Momentum (t-1)	0.52000	0.610	0.58200	0.720	0.43800	0.783
Other Determinants						
FTSE100	0.763**	0.014	1.484***	0.000	0.805***	0.001
FTSE250	0.534***	0.000	0.412**	0.030	-0.09300	0.563
FTSE Small Cap	0.334***	0.008	-0.06300	0.727	-0.376**	0.038
ROA	2.272***	0.000	5.251***	0.000	3.115***	0.000
Free Cash Flow/Assets	5.064***	0.000	4.603***	0.000	1.645*	0.063
Market-to-book	0.004***	0.006	0.00200	0.559	-0.00200	0.313
Debt/Assets	0.48200	0.216	-0.30400	0.534	-0.923**	0.032
Var(CF)	0.042*	0.082	0.02200	0.520	-0.02300	0.451
Past Payout	0.01100	0.523	0.00700	0.698	-0.00800	0.467
Boardsize	0.02900	0.256	0.03600	0.306	0.00800	0.779
Female (%)	0.72200	0.399	0.74500	0.456	0.02200	0.980
CEO gender	0.19700	0.568	-0.776*	0.063	-1.053***	0.010
CEO age	0.028***	0.000	0.00300	0.752	-0.025***	0.005
CEO tenure	0.033***	0.009	0.034**	0.032	0.00800	0.501
Dividend Surprise	-0.001*	0.050	0.00000	0.444	0.01800	0.276
Log-Likelihood		-1913.087			-658.000	
R-squared						
Industry dummies		Yes			Yes	
Number of observations		4376			3386	

Table 3-12 Nested Logit: First Payout Policy, then Payout Channel Choice.

This table presents a nested logit regression of the choice between an increasing, stable and decreasing payout policy and then in a second step on the alternatives: (1) dividends, (2) share repurchases, dividends and share repurchases, and (3) no payout. The independent variables are remuneration, taxation, sentiment and other determinants. Stable and dividend is assumed to be the base category/alternative. The data are extracted from Datastream, Manifest, and Zephyr.

	Increase				**Decrease**				**Stable**			
	Dividend		**SR/Dividends + SR**		**Dividend**		**SR/Dividends + SR**		**Dividend**		**SR/Dividends + SR**	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Remuneration												
Salary/Assets	-0.150	-2.10**	0.420	0.36	0.010	0.34	-1.000	-1.29			-40.430	-3.33***
Bonus/Assets	0.310	3.28***	-6.510	-3.18***	0.040	0.52	-0.150	-0.24			24.360	2.80***
Fees/Assets	-2.120	-1.12	17.690	1.42	-0.110	-0.29	-264515.610	-0.11			-347293.980	.
Option/Assets	-0.090	-1.81*	1.060	2.56**	0.020	0.78	-2.420	-0.84			3.320	0.90
Restricted Stock/Assets	0.050	0.75	1.520	1.99**	0.040	0.85	0.010	0.02			-7.340	-1.91*
Miscellaneous/Assets	0.460	1.74*	-13.500	-1.38	0.000	0.01	-73091.540	-0.03			-245.520	-0.54
Other/Assets	-0.200	-0.89	2.440	2.68***	0.320	1.66*	-11.760	-1.55			49.180	3.00***
Ownership												
CEO ownership	0.010	0.52	0.100	0.35	0.000	-0.06	0.110	1.52			-0.550	-0.32
Non-executive ownership	-0.040	-2.48**	0.660	3.47***	0.010	0.89	-0.090	-0.68	(Base Case)		1.270	3.25***
Executive ownership (excl.	-0.020	-1.06	0.470	1.80*	0.010	0.78	0.170	2.59***			0.090	0.18
Institutional ownership	-0.010	-1.07	0.050	0.42	0.000	0.00	-0.030	-0.67			-0.090	-1.09
Individual & Families own	-0.030	-1.53	-0.200	-0.67	-0.010	-0.63	-0.310	-1.69*			-17587.650	.
Industrial ownership	-0.020	-2.36**	0.330	2.26**	0.010	1.63	0.050	1.23			-0.160	-1.46
Pension fund ownership	0.120	1.87*	-0.640	-0.60	0.100	2.19**	0.090	0.23			-35.000	-0.05
Taxation												
Tax Period 1999-2001	0.380	0.50	-37.850	-3.16***	-0.940	-2.04**	-10.990	-1.93*			-24.810	-3.52***
Tax Period 2002-2007	-1.020	-1.35	-15.400	-1.34	-1.770	-3.86***	-2.040	-0.44			-13.590	-2.31**
Sentiment												
Dividend Premium (t-1)	0.010	0.05	4.490	1.84*	0.030	0.40	2.000	2.62***			3.580	2.50**
Trading Volume	-1.130	-5.04***	14.880	4.82***	0.160	1.27	2.380	3.15***			5.010	2.80***
Momentum (t-1)	-0.820	-0.30	-3.450	-0.07	-0.440	-0.23	-10.570	-0.56			-42.160	-1.28
Constant	2.580	2.01**	-206.400	-4.48***	2.220	3.17***	-44.160	-0.29			-40.750	-2.34**
increase_tau (constant)						58.090 (6.35***)						
stable_tau (constant)						12.130 (4.32***)						
decrease_tau (constant)						4.150 (3.93***)						
Other Determinants						Yes						
Log-Likelihood						-3080.378						
Number of cases						3317						

Variable	Description and source
Panel A: Financial, performance, and sentiment characteristics	
Assets (in £ '000)	The book value of total assets. Source: *Datastream*
Debt ratio	Total debt divided by total assets. Source: *Datastream*
Market cap (in £'000)	Market capitalization of equity. Source: *Datastream*
Sales (in £'000)	The value of total net sales. Source: *Datastream*
Size (log Sales)	The logarithm of total net sales. Source: *Datastream*
EBIT (in £'000)	Earnings before interest and taxes. Source: *Datastream*
EBIT/Sales (if EBIT>0)	Earnings before interest and taxes. Source: *Datastream*
Market-to-book	Market capitalization of equity divided by the book value of equity. Source: *Datastream*
ROE / ROA (in %)	Return on equity/assets. Source: *Datastream*
ROAadj.	Return on assets adjusted by industry performance. Source: *Datastream*
FTALLSH	FTSE All Share Index per year. Source: *Datastream*
Debt/Equity	Total debt divided by common equity. Source: *Datastream*
Trading Vol./Shares	Trading volume divided by shares outstanding. Source: *Datastream*
Var(CF)	The variance of cash flow per shares. Source: *Datastream*
Momentum	Lagged momentum variable, calculated as pseudo (calculated on nested sorts) Fama-French-Carhart factor. Source: *Styleresearch*
Panel B: Corporate governance characteristics	
Boardsize	The number of directors on the board. Source: *Boardex, Manifest*
Executive directors	Executive directors (excluding the CEO) serving on the board. Source: *Boardex, Manifest*
Non-executive directors	Non-executive directors serving on the board. Source: *Boardex, Manifest*
Female	A binary variable on the gender of the director. Female is coded as 1. Male is coded as zero. Source: *Boardex, Manifest*
CEO/Chairman duality	A dummy variable equal to one if the chairman of the board also serves as CEO. Source: *Boardex, Manifest*
AuditComm Presence	A dummy variable equal to one if an audit committee is present. Source: *Boardex, Manifest*
NominComm Presence	A dummy variable equal to one if a nomination committee is present. Source: *Boardex, Manifest*
RemunComm Presence	A dummy variable equal to one if a remuneration committee is present. Source: *Boardex, Manifest*
CEO gender	A dummy variable equal to one if a CEO is male, and equal to zero if female. Source: *Boardex, Manifest*
Executive tenure	The number of years an executive director serves in the current Position. Source: *Boardex, Manifest*
Panel C: Remuneration characteristics:	
Salary	Fixed remuneration of executive director. Source: *Boardex, Manifest*
Fee	Fixed remuneration (predominantly paid to non-executive directors). Source: *Boardex, Manifest*
Bonus	Remuneration based on performance; paid out annually. Source: *Boardex, Manifest*
Equity-based compensation	Remuneration consisting of stock options and restricted shares. Source: Own calculations, *Boardex, Manifest*

Miscellaneous	Sum of transaction bonus, deferred cash bonus, severance pay, recruitment bonus and relocation bonus. Source: *Boardex, Manifest*
Other	Sum of additional remuneration components, such as insurance payments. Source: *Boardex, Manifest*
Total	Sum of all aspects of remuneration. Source: Own calculations based on *Boardex, Manifest*
Option/Assets	The value of stock options awarded (BS-value) divided by total assets. Source: *Boardex, Manifest*
Restricted stock/Assets	The value of total restricted shares divided by total assets. Source: *Boardex, Manifest*

Panel D: Payout and taxation characteristics

No payout	The multivariate variable indicates no payout (Y=0). Source: *Manifest* and *Zephyr*
Dividend	The multivariate variable indicated dividend payout (Y=1). Source: *Manifest* and *Zephyr*
Share repurchase	The multivariate variable indicates share repurchases (Y=2). Source: *Manifest* and *Zephyr*
Divs & SRs	The multivariate variable indicates dividends and share repurchases (Y=3). Source: *Manifest* and *Zephyr*
Totalpayout	The total value of dividends and share repurchases. Source: *Manifest* and *Zephyr*
Dividends/EBIT	The value of dividend payout divided by EBIT. Source: *Manifest* and *Zephyr*
Share repurchases/EBIT	The value of share repurchases divided by EBIT. Source: *Manifest* and *Zephyr*
Divs & SRs/EBIT	The value of dividends and share repurchases divided by EBIT. Source: *Manifest* and *Zephyr*
Past Payout	The value of lagged totalpayout divided by lagged EBIT. Source: *Manifest* and *Zephyr*
DivPremium	The log of the average market-to-book-ratio of dividend payers minus non-dividend payers. Source: Own calculations
Tax Period 97-98	A dummy variable equal to one during the period from 1997-1998.
Tax Period 02-07	A dummy variable equal to one during the period from 2002-2007.

Panel E: Indices and sector information

FTSE 100	A dummy variable equal to one if a company is member of the FTSE100. Source: *Boardex, Manifest*
FTSE 250	A dummy variable equal to one if a company is member of the FTSE250. Source: *Boardex, Manifest*
FTSE Small Cap	A dummy variable equal to one if a company is member of the FTSE Small Cap. Source: *Boardex, Manifest*
FTSE Fledgling	A dummy variable equal to one if a company is member of the FTSE Fledgling. Source: *Boardex, Manifest*
LSE	A dummy variable equal to one if a company is listed on the London Stock Exchange. Source: *Boardex, Manifest*
AIM	A dummy variable equal to one if a company is listed on the Alternative Investment Market. Source: *Boardex, Manifest*
Fin. Sector	A dummy variable equal to one if a company is operating in the financial sector. Source: *Boardex, Manifest*

Panel F: Ownership characteristics

CEO ownership	The percentage of stock held by the CEO. Source: *Boardex, Manifest*
Executive ownership	The percentage of stock held by the executive directors. Source: *Boardex, Manifest*
Non-executive ownership	The percentage of stock held by the non-executive directors. Source: *Boardex, Manifest*
Insider ownership	The cumulative percentage of share stakes held by executive- & non-executive directors. Source: *Boardex, Manifest*
Nominee account ownership	The cumulative percentage of share stakes (>3%) held in nominee accounts. Source: *Boardex, Manifest*
Institutional ownership	The percentage of stock held by financial institutions. Source: *Boardex, Manifest*
Bank ownership	The percentage of stock held by banks. Source: *Boardex, Manifest*
Insurance ownership	The percentage of stock held by insurance companies. Source: *Boardex, Manifest*
Investment trust ownership	The percentage of stock held by investment trusts. Source: *Boardex, Manifest*
Pension fund ownership	The percentage of stock held by pension fund. Source: *Boardex, Manifest*
Individuals & families ownership	The percentage of stock held by individuals and families. Source: *Boardex, Manifest*
Industrial ownership	The percentage of stock held by corporations. Source: *Boardex, Manifest*
Outsider ownership	The cumulative percentage of share stakes held by outside owners. Source: *Boardex, Manifest*

Chapter 4

Do Tax Advantages Lead To Dividend Replacement?

'But in the real world there remains one overwhelming reason why dividend policy is not irrelevant: tax. The way dividends are taxed can have wide-ranging consequences for how a firm is run. In particular, it can influence whether a firm finances itself primarily through equity or debt, and how it chooses to return profits to its shareholders.' (The Economist, 9th January, 2003)

'In Britain Gordon Brown staged an infamous pensions tax "grab" in 1997, which reduced private pension funds' income by around £5 billion (then $8.4 billion) a year by eliminating the tax credit on dividend payments.' (The Economist, 2nd December, 2010)

'In America dividends seemed to go out of fashion in the 1990s. A yield of 2% or so appeared trivial when the market was rising by 20% a year. The disrespect for dividends also reflected the belief that, for tax reasons, share repurchases were a better way of returning cash to investors.' (The Economist, 2nd September, 2010)

4.1 Introduction

Over the past 15 years, there has been a strong decrease (of 30%) of UK listed firms paying out only dividends. The proportion of firms that pay out earnings by means of share repurchases or combine this payout channel with dividends has been rising but only modestly so. Strikingly, we show that the number of listed firms not paying out has been on the rise by about 30% (see below). Renneboog and Trojanowski (2011) report similar trends for the UK.[60] Fama and French (2001) show that US corporations tend to payout substantially less often over the last quarter of a century. However, DeAngelo, DeAngelo and Skinner (2004) suggest that the tendency of very large dividend payers even increasing their pay out counterbalances the effect on the total amount paid out.

Corporate finance textbooks typically refer to the dividend irrelevance theorem by Modigliani and Miller (1961) when introducing readers to dividend policy. Investors are indifferent as to whether a firm chooses dividends or share repurchases in a perfect capital market. Allen and Michaely (2002: 13) rephrase this idea: 'any desired stream of payments can

[60] While our paper is close to the work of Renneboog and Trojanowski (2011) in that we test for the effect of tax reforms on payout policy, we examine tax effects in much greater detail and account for a multitude of variables.

be replicated by appropriate purchases and sales of equity'. A number of reasons have been advanced that may cause the above statement not to hold, including the flexibility argument, which states that more sophisticated investors do not any more need the 'late' revelation of news by dividend announcements and thus prefer stock repurchases, because contrary to dividends they do not implicitly form a future commitment to pay out (Ofer and Thakor, 1987; Stephens and Weisbach, 1989; Jagannathan, Stephens and Weisbach, 2000; Amihud and Li, 2006).

Moreover, executive remuneration has been proposed as another important determinant of the payout decision: The argument goes that CEOs with option packages in place tend to avoid dividend payout, due to the associated negative effect on their wealth, and instead prefer share repurchases (Fenn and Liang, 2001; Liljeblom and Pasternack, 2006; Aboody and Kasznik, 2008; Geiler and Renneboog, 2012).

Signalling models assume that companies adjust their dividends to signal their future prospects to the market (Allen and Michaely, 2002; Allen, Bernardo and Welch, 2000; Miller and Rock, 1985; Bhattacharya, 1979). According to Allen and Michaely (2002), the accumulated evidence indicates that changes in payout policy are not motivated by firms' intention to signal their true worth to the market, rather they suggest that dividends and share repurchases are a way to reduce overinvestment by management. This is in line with Jensen's (1986) 'free cash flow theory', which says that a commitment to payout reduces managements' discretion and the tendency to invest in value-reducing projects. On the other hand, Hovakimian, Opler, and Titman (2001) report that more profitable firms have on average lower leverage ratios and tend to prefer share repurchases to repaying debt. In line with the positive effect of share repurchases on the leverage ratio, Jagannathan and Stephens (2003) suggest that firms with the lowest leverage ratio are those that most frequently engage in repurchases.

A perhaps obvious reason is taxation (Allen and Michaely, 2002; DeAngelo et al., 2008). Allen and Michaely (2002) survey the payout literature and conclude that there seems to be an effect of differential taxes (between dividends and capital gains) on prices above measurement errors and market imperfections, but that there is little evidence of a significant clientele shift triggered by dividend changes. DeAngelo et al. (2008) argue by referring to Modigliani and Miller (1958, 1963) that the introduction of a tax on payout should lead to a replacement of payout by retention, but acknowledge that such a shift does not occur. Contrary

to Black (1976), they argue that even if dividends in contrast to unrealized capital gains are taxed, payouts will not cease to exist, because the capital appreciation gained by foregone dividends is not one-to-one in a world with and without taxes, and investors can gain value from holding securities that decide to return value (DeAngelo et al., 2008). Given the mixed empirical evidence of the impact of taxes on the payout decision, we revisit this issue for the UK while at the same time considering alternative explanations such as market sentiment (measured by dividend premium, trading volume, and momentum), managerial incentives (induced by compensation package, ownership, and individual characteristics) and company-specific characteristics (such as size, performance, and risk).

Over the past two decades, the UK has seen many reforms on the tax treatment of dividends and share repurchases. For instance, the tax reform in 1997 withdrew the ability of tax-exempt investors to reclaim tax credits on dividends and led to an immediate drop in the after-tax value of dividends to pension funds of approximately 20% (Bell and Jenkinson, 2002, Bond, Devereux, and Klemm, 2007). This supported the suggestion by Bond, Chennels and Devereux (1996) that a more neutral tax treatment of the dividend payout could negatively affect dividend payout ratios, which were previously inflated precisely because of the tax treatment. As taxation seems to affect the valuation of companies, payout policy consequently seems to fluctuate substantially in the UK, with a decreasing trend to use dividends as the only payout channel, but an increase in combining dividends with share repurchases.

Our approach consists of four steps. We first use a multinomial logit setup to examine the impact of the different tax periods. Second, we estimate the relative attractiveness of the different payout channels (dividends, share repurchases, or a combination of both). Third, we investigate the impact of taxation on the switching behavior from one payout method to another using a dynamic probit model. Fourth, we estimate an extended Lintner (1956) model to explore the impact of taxation on the aggregated dividend payout.

The contributions of this paper are several: While there is little research investigating the effect of taxation on corporate decision-making in the UK (e.g. Bell and Jenkinson (2002) and Bond et al. (2007) on the effect of taxes on the valuation of companies), this paper is to our knowledge the first to address the effect of taxation on the corporate distribution method (dividend payout versus share repurchases). Moreover, our data set is particularly rich and compelling: our analysis is based on a very large panel comprising virtually all listed UK

companies for more than a decade. In addition and contrary to many US studies, we dispose of information on the share repurchases that are actually performed.

The paper reaches some interesting conclusions. First, in spite of the frequent legal changes, which affect the relative attractiveness of dividends and share repurchases (or no payout), we find mixed effects of our simple tax dummies on the payout channel choice: we observe that the Finance Act in 1997 and the abolition of the Advanced Corporation Tax affected the payout choice of firms. These major tax changes were followed by a change in firm preferences concerning dividends and share repurchases: we observe a decreasing preference for dividends versus retention during the years 1997-2001, but also, in the case of payout, an increasing preference of dividends to share repurchases. During 1999-2001, we find a particularly strong tendency to avoid share repurchases in favor of retention, or, in the case of payout, of dividends. During 2002-2007, we only observe a preference of retention over dividends.

Second, when we focus on the relation between ownership concentration by type of shareholder and the applicable tax regulations, we can only provide mixed evidence that simple after-tax measures of dividends and share repurchases can proxy for the preferences of various types of investors. We find that institutional owners seem to derive a higher utility from share repurchases during the years 1999-2007, while individuals and families develop a strong distaste for share repurchases versus retention during the same tax period. In the case of pension funds, we find that they seem to have a strong preference for retention versus share repurchases over the years 1997-2001. In 1999-2007, pension funds seem to avoid payout at all. While pension funds should have strongly preferred dividends to share repurchases until 1997, the tax change that removed the associated tax credit, seems to have made them neutral against both payout methods, as the tax treatment of pension funds seems not to have any impact on payout policy. In addition, we find that relative changes in the after-tax value of dividends and share repurchases are reflected in the preferences of various groups of owners.

Third, we investigate whether changes in the tax regulations affect the switching decision of firms between dividends and share repurchases in case of payout. For this reason, we employ a dynamic probit model and find that taxes heavily affect the switching decision between the payout alternatives: the prevailing tax regulations in the years 1999-2001 are

strongly associated with the decision towards dividends. At the same time, our results suggest state dependency in the case of dividend payout.

Fourth, we estimate an advanced Lintner model on the aggregate level of dividend payout, including three different tax preference parameters for individual investors, pension funds, and corporate investors. In line with Poterba (2004), we find that short-run changes of these parameters have only a small and insignificant impact on aggregate dividends. Our findings suggest, however, that the relative tax burden on dividends and on capital gains mostly negatively affects the share of earnings that is distributed as dividends in the long run.

The remainder of this paper is organized as follows: Section 2 summarizes the evolution of payout over the past 15 years and Section 3 sketches the important regulatory framework of the payout decision. Section 4 reports the various tax regimes starting since 1994 and our conjectures. Section 5 presents the dataset and the methodological approach. Section 6 discusses the results and Section 7 concludes.

4.2 The Evolution of Earnings Payout

How did payout policy evolve over the past 15 years? Could it be that the frequent changes in the tax rules have influenced the payout policy of UK firms or are other economic determinants responsible? Considering the payout policy of a pooled sample of UK firms from 1996-2007, we find that currently corporations prefer to pay our earnings in the form of dividends to all other forms of payout and to plowing all earnings back into the company. Table 4-1 details that 68.3% of all firms pay out dividends, roughly 28% do not pay out, and only about 3% use a combination of dividends and share repurchases. The decision to engage solely in share repurchases is rather unpopular – only 0.3% of all firms do so. Firms without a payout are rare within the FTSE 350 firms but are more present among the FTSE Small Caps and Fledglings. Combining dividends and share repurchases is more frequently observed in FTSE 100 (13.36%) and the FTSE 250 (4.27%) firms. When we consider the amounts paid out, the picture looks different. Table 4-2 details that firms pay out approximately 27% of EBIT by means of dividends and roughly 47% of EBIT via a combination of dividends and share repurchases (if EBIT>0). This is roughly in line with the findings presented by Renneboog and Trojanowski (2007), who report an average dividend payout over earnings of about 33%. Our findings concerning total payout are, however, considerably larger than the

total payout over earnings of 37% (if EBIT>0) reported by Renneboog and Trojanowski (2007). The dividend payout level is higher for the firms, which are part of the FTSE 100 (30.57%) and the FTSE 250 (27.96%) than for FTSE Small Caps (25.84%) and Fledglings.

[Insert Tables 4-1 and 4-2, about here]

But how did payout policy evolve over time? We find that the number of firms paying out dividends has decreased substantially over time: Figure 4-1 details that while in 1998 about 86% of all firms paid out dividends, only around 55% do so in 2007. This is in accordance with the findings presented by Ferris, Sen and Yui (2006), which indicate a decline in the total number of dividend payers from 75.9% to 54.5% over the period 1988 through 2002. Overall, this development reflects a decrease of roughly 30% in the number of dividend payers over time. At the same time, the number of firms not paying out increased by approximately the same relative number of firms. Since 2002, we observe an increase in the number of firms combining dividends and share repurchases. Whereas the payout ratio over EBIT both of dividends and the combination of dividends and share repurchases is roughly stable over time, the use of share repurchases is very volatile and varies greatly in the level of payout (Figure 4-2). Is the development in the UK different from the US? In fact, the tendency of disappearing dividends mirrors a global development: While many firms in the US traditionally opted for dividends (Fama and French, 2001), share repurchases have become a popular payout method (Grullon and Michaely, 2002). DeAngelo et al. (2004) also confirm that the number of dividend paying firms decreased significantly, albeit they report that the total amount paid out as dividends remained rather constant.

In sum, while a large number of firms pays out dividends, there has been a substantial increase in the number of non-payers and in the number of firms using a combination of dividends and share repurchases over the last decade. While the dividend payout ratio stays almost constant over time at approximately 32%, the amount paid out via both dividends and share repurchases decreases constantly over time, albeit with a peak in 2001. The question remains whether taxation can explain these shifts in payout?

[Insert Figures 4-1 and 4-2 about here]

Regulatory Framework of the Payout Decision

While the Companies Act does not prescribe who is responsible for declaring a dividend, this is typically done by an ordinary resolution of the shareholders on the annual meeting.[61] In general terms, a distinction is made between a final dividend and an interim dividend. The final dividend is usually proposed at the annual meeting and does not exceed an amount recommended by the directors, whereas an interim dividend is typically paid in between annual meetings when the directors are convinced that the firm's financial position warrants a payout.[62]

Share repurchases are considered in various acts and codes, including the Companies Act, the FSA Listing Rules, the Model articles, and the Criminal Justice Act. The provisions of the Companies Act 2006 generally prohibit a limited company to acquire its own shares, unless several other provisions are met.[63] Notably, a company that intends to repurchase shares is expected to pay for these shares in full at the time of the purchase.[64] A share buy back is limited to 15% of the number of shares outstanding. Moreover, the Companies Act 2006 requires share repurchases to be approved prior to the purchase with a (special) resolution.[65] The FSA Listing Rules prescribe to submit the actual price and volume of every transaction, including the date as soon as possible and no later than 7:30am on the day after the transaction. Furthermore, the rules impose a prohibition period during which a firm is prohibited to engage in share buybacks.[66] This prohibition period spans the 60 days prior to the preliminary announcement of a company's annual or interim report, or, if shorter, the period from the relevant financial yearend up to and including the date of the announcement.[67] The period does not apply to buy-back programs, managed by independent external parties, that are already in place and of which the dates and quantities to be traded are already disclosed and fixed.

The Companies Act makes an important distinction between market and off-market repurchases:[68] a market purchase takes place on a recognized investment exchange (e.g. LSE, AIM) and is subject to a marketing arrangement. Shares are deemed to be subject to a

[61] See Income and Corporation Taxes Act, 1988, s. 209.
[62] See Income and Corporation Taxes Act, 1988, s. 263-281.
[63] See Companies Act, 2006, s. 658.
[64] See Companies Act, 2006, ss. 690 - 692.
[65] See Companies Act, 2006, ss. 694 and 701.
[66] See FSA Handbook, Listing Rules (LR) 12.
[67] See The Companies (Model Articles) Regulations, 2008.
[68] See Companies Act, 2006, s. 693.

marketing arrangement if the firm disposes of facilities for trading in those shares without prior permission from the exchange and without a limit regarding the time during which these facilities are available (Ferran, 2008). The Act also details that any purchase that is not made on a recognized investment exchange or that is not subject to a marketing arrangement is an 'off-market purchase'.[69] Our sample contains only companies that are listed on the LSE and/or the AIM and therefore our sample solely consists of actual market repurchases.

Two relevant variants of off-market repurchases are private repurchases and tender offers. The Listing Rules define a tender offer as the intent to purchase all or part of the shares belonging to a class of securities at a maximum or fixed price, which is communicated to all shareholders. The same code also describes a minimum time of seven days during which a tender offer must be open on the same terms, and a request that the offer is open to all shareholders of the class pro rata to their existing holdings.[70] Importantly, there are certain price restrictions if a company acquires less than 15% of any class of its own equity shares within a period of 12 months and without the usage of a tender offer: the price cannot be more than the higher of (i) 5% of the average market value of the company's equity shares for the 5 business days prior to the purchase, or (ii) an amount stipulated by Article 5 of the Buy-back and Stabilization Regulation.[71] If a company acquires at least 15% of any class of its own equity shares within an equally long period of time, it must do so by making a tender offer to all shareholders of that class. In the case of private buybacks, the group of potential participants is restricted.

Many research papers conclude that share repurchases are employed as a substitute for dividends because of the lower level of commitment associated with their usage (Brav, Graham, Harvey, Campell, and Michaely, 2005, Fenn and Liang, 2001, Jagannathan et al., 2000). Following this idea, we assume that firms opt for open market share repurchases because of their increased flexibility as opposed to dividends in terms of the expectations they instill with investors. In other words, we assume that firms use share repurchases to avoid commitment. Consequently, we assume that the repurchases in our sample are (used as) open-market share repurchases.

[69] While the tax consequences for a company that buys back its own shares are the same whether the buyback is a market purchase or an off-market purchase, the treatment for unquoted companies is different.
[70] See FSA Handbook, Listing Rules (LR), Appendix 1.
[71] See FSA Handbook, Listing Rules (LR) 12.4.

Finally, according to the Criminal Justice Act 1993, a company is not allowed to deal in securities, if the directors dispose of information that is not public, but likely to affect the share price substantially.[72] Since December 2003, a further change in legislation introduced treasury shares: a company can purchase its own qualified shares out of distributable profits for future resale.[73] Companies buying treasury shares may not, however, exceed an upper maximum of 10% of the nominal value of the issued share capital of the company at that time. With respect to treasury shares, the company must not exercise any right (including voting rights at the general meeting) and must not make any distribution in respect of these shares.[74] At any time, treasury shares may be disposed off or cancelled, in which case the firm needs to issue a notice of disposal/cancellation and needs to deliver a return to the registrar within 28 days.[75]

In sum, there is a multitude of laws that need to be considered in order to engage in share repurchases in the UK. In particular the FSA listing rules with their tight disclosure requirements, price ranges, and prohibition periods impose rather restrictive measures on share repurchases. As a result, it is also more difficult to use share repurchases in the UK than in the US to exploit perceived undervaluation (Rau and Vermaelen, 2002).[76]

4.3 Taxation and Conjectures

'The story of corporate and dividend taxation in the United Kingdom over the last 50 or more years is a story of change.' (Gammie, 1998: 429)

The UK tax system details different treatments for both dividends and share repurchases. The treatment of dividends is specified in the law on income tax for individual investors and in the law on corporation tax for corporations. The tax treatment of share repurchases is detailed in the law on capital gains tax.

[72] See Criminal Justice Act, 1993, Part V (Insider Dealing).
[73] In principal, treasury shares give companies additional flexibility with regard to the management of their capital structure because the shares can be re-sold without having to go trough the full range of formalities that apply to new share issues. Treasury shares can be used to satisfy entitlements under employee share schemes. However, this should have no effect on the taxation of share buybacks and dividends. For further details: See Companies Act, 2006, s. 724.
[74] See Companied Act, 2006, ss. 725-726.
[75] See Companies Act, 2006, ss. 727-730.
[76] According to Espenlaub, Lin, Strong, and Wang (2010: 3): „there is little consensus on the information content of open market share repurchases.", i.e. it remains questionable whether open market share repurchases are used to exploit (perceived) underpricing.

Income tax is a tax on 'taxable' income of individuals – including income from shares (dividends) – above a certain level. This level of the tax exemption is determined by the applicable Personal Allowance, which currently amounts to £7,475. However, the tax rate on dividend income is often lower than for other forms of income to compensate for the tax paid at the corporate level. The appropriate income tax rate depends on the level of income and is 10% (basic rate), 32.5% (higher rate), and 42% (additional rate).

Corporation tax is charged on the profits realized by corporations. Contrary to the case with individuals, there exists no allowance that grants tax exemption for corporations up to a certain level. However, corporate shareholders, who receive dividends from a UK resident company, do not pay taxes on these dividends.[77] In any other case, the appropriate rate of Corporation Tax is 21% (lower rate) and 28% (upper rate).

Capital gains tax is a tax levied on the gain from the disposal of a capital asset, e.g. on the sale of shares, and applies to both individuals and corporations.[78,79] Figure 4-3 shows the development of the corporation tax rate from 1993 to 2010. For the calculation of the gain of a listed company it is irrelevant whether the shares are sold on the exchange or off-market.[80] Likewise, the tax consequences in both cases are similar for UK-resident individual shareholders. As in the case of income tax, there is an 'Annual Exempt Amount' for individuals of currently £10,100. For a gain from share repurchases exceeding this amount, individuals pay capital gains tax (cgt) at a flat rate of 18%[81], i.e. taking into account the exempt amount their effective tax rate is lower than 18%. Corporations, however, are subject to corporation tax on the full amount of the gain at a small companies' rate of 20% and a main rate of 26%. The gain is typically calculated as the difference between the disposal proceeds and the original purchase price plus allowable related expenditure, several types of which have been operated in the UK, including 'indexation allowance', 'taper relief', and the 'substantial shareholdings exemption' (see below). If shareholders, however, decide to keep their stocks, the price of the holder's share should rise, while the taxation of these gains is delayed until the actual sale of the shares.

[77] See Income and Corporation Taxes Act, 1988, s. 208.
[78] See Taxation of Chargeable Gains Act, 1992, section 2.
[79] Certain exceptions apply, however, including qualifying corporate bonds, venture capital trusts, and enterprise investment schemes under certain conditions.
[80] The tax treatment differs, however, for unquoted companies.
[81] Per the budget of 22 June 2010, there is a higher rate of 28%.

[Insert Figure 4-3, about here]

The problem with the tax treatment as described above is that profits are first taxed at the corporate level, and then, when redistributed, e.g. via dividends, they are again taxed at the individual level as income. To reduce double taxation, the UK decided to operate a modified imputation system for many years (1973-1999). An imputation system offers the advantage that part or all of the tax paid by the company can be attributed ('imputed') to the shareholders by way of a tax credit. Companies can forward these imputation tax credits to shareholders along with dividends, thereby representing the tax paid by the company upon its pre-tax profit. In the case of share repurchases, the imputation tax credit is equal to the 'distribution element', which is defined as the difference between the market value of the repurchased shares and the book value of the corresponding paid-in capital ('the capital element'). It is important to note, that the exclusive repayment of capital does not form a distribution and thus triggers no capital gains tax.

4.3.1 Specific Imputation System (1973-1999)

In the UK, the introduction of the so-called Advanced Corporation Tax (ACT) on April 6, 1973 marked the beginning of the imputation system with as aim the alleviation of double taxation.[82] While companies had to pay an additional tax on distributed profits, they could set these payments off against their liability to corporation tax.[83] The tax treatment was different for dividends and share repurchases:

In the case of dividends, corporations could deduct ACT from the gross mainstream corporation tax for the accounting period, in which the dividends were paid, to arrive at the corporation tax payable. As mentioned above, receiving corporations were exempted from a tax on dividends. They could, however, use the dividends received to reduce their own ACT payment.[84] When an individual shareholder received a dividend, the basic rate of income tax was deemed to have been paid, already, i.e. for individuals subject to the higher rate of income tax, additional tax payments were required. The imputation tax credit was fully refundable for tax-exempt shareholders (pension funds, insurance companies w.r.t. their pension business,

[82] Finance Act 1972, s. 84(1).
[83] See Income and Corporation Taxes Act, 1988, s. 239.
[84] For a company, ACT payable was calculated as: ACT fraction x (dividends paid – dividends received).

and individuals holding shares through Personal Equity Plans). In other words, pension funds did not pay taxes on dividends, but received a tax credit that they could use to obtain full cash refund.

In the case of share repurchases, the distribution element was taken into account: The companies paid ACT on the difference between the repurchase price and the original subscription price ('distribution element') and could offset it against mainstream corporation tax. If cash was distributed via share repurchases, corporations can generally forward imputation tax credits to shareholders. These imputation tax credits were equal to the taxes paid by the company on the 'distribution element'[85] of share buybacks.[86] In the case of share repurchases, both individuals investors and corporations were treated in a similar way: corporations paid corporation tax on the distribution element, and individual investors paid income tax (at their personal rate) on the distribution element. Both, corporations and individuals could offset the tax credit against their tax liabilities. As in the case with dividends, tax-exempt shareholders did not pay taxes on the distribution element, but received a tax credit.

During the time of the specific indexation system, several types of 'allowable related expenditures' were taken into account. An allowable expenditure led to an increase in the original purchase price of a share, and therefore reduced the so-called 'gain'. An 'indexation allowance' was given between 31 March 1982 and April 6th, 1998 and allowed to increase the cost of the shares by the change in the retail price. During that time, the average cost per share was calculated based on the average purchase price of all of the same shares plus indexation - also referred to as 'pooling'.[87] Neither indexation nor pooling was allowed after the law changed in April 1998. Instead, the indexation allowance was replaced by the taper relief, which allowed making deductions based on the years that a share was held, thereby relying on the Last In First Out (LIFO) method. Taper relief distinguishes two types of assets: business assets and non-business assets. The taper relief for business assets grants a reduction of 50% after one year and of 75% after two years on the gains realized from holding a share. The

[85] For unquoted companies, the default position is that the whole amount is a capital gain unless certain exemptions apply. See Income and Corporation Taxes Act, 1988, s. 219.
[86] The purchase by a company of its own shares was legalized in the UK by the Companies Act 1981.
[87] Note: HMRC considered the calculation of an average price the most appropriate method, if shares were unnumbered and issued at different prices.

reduction on non-business assets[88] is significantly lower and grants 5% after three years and up to 40% after ten years. However, employee scheme shares are generally classified as business assets. Interestingly, other than these, direct investments in listed firms are treated as non-business assets, if there is no employee involvement by the shareholder.

The concept of an imputation system had, however, several limitations: to begin with, there was a limit on the amount of ACT, as the advanced corporation tax together with the net dividend paid was supposed not to exceed the company's current taxable profits (Gammie, 1998). ACT in excess of this was referred to as 'surplus ACT' and could be carried forward and backward (see below). In the case of non-sufficient profits, this led to a surplus ACT problem (Shirley, 1997). Over time, many companies faced the problem that they could not offset the taxes paid against the taxes they owed and consequently ended up paying enormous amounts of taxes. Estimates were that the stock of outstanding surplus ACT was about $5bn and rising – clearly a big problem of the imputation system. First, the government reacted with a reduction in the ACT rate of 25% to 22.5% in 1993-94 and to 20% in 1994-95 (see below for a detailed explanation). Finally, the government decided to the return to a classical system in 1999.

4.3.2 Return to the Classical System (Since 1999)

The return to the classical system went hand in hand with the disappearance of ACT and thus also with a cut in the associated tax credit. The primary effect for corporations was, that they could no longer offset ACT against their mainstream taxes. But also receiving corporations could no longer use the tax credits. Likewise, individual shareholders had to pay income tax again in full on dividends. The return to the classical system also had a strong effect on the after-tax value of pension funds: while they continued to be tax-exempt, they did not receive the tax credit any more.

Some other changes were made concerning the 'allowable expenditure': taper relief was abolished for disposals after April 5, 2008 and replaced by Entrepreneurs' Relief. Entrepreneurs' Relief reduces the amount of the capital gain to be taxed on a disposal of qualifying business assets (subject to various conditions). The effective rate charged on capital

[88] Unlisted companies and companies listed on the AIM but whose main business is not trading, are classified as non-business assets.

gains under Entrepreneur's Relief is equal to 10% for up to £1 million[89] of gains per individual over the course of a lifetime. In contrast to individual shareholders, companies continue to receive indexation relief on gains, but do not receive taper relief. Capital gains may be offset by capital losses belonging to the same accounting period.[90] Lastly, on 1 April 2002, a substantial shareholdings exemption (SSE) was introduced that was of particular importance for trading groups.[91] The SSE exempts from the assessment of capital gains for shareholdings of 10% or more of the shares in another company (subject to various conditions being met).[92]

Overall, changes to the taxation regulations of both dividends and share repurchases have a substantial impact on the after-tax value of both payout channels. Accordingly, shareholders' preference for dividends over share repurchases can change over time.[93] In a more detailed analysis of these tax changes, we consider three different types of shareholders: individuals (including directors), corporations (including institutional investors, but excluding pension funds), and pension funds (including charities), as the tax treatment details special rules for these groups of investors.[94] In what follows, we distinguish between six different tax regimes between 1993 and 2010 covering both the specific imputation system and the classical imputation system. In particular, we describe the changes in tax law on dividends and share repurchases in detail. The Appendix provides worked-out examples and thus additional details on the calculation of after-tax values for both dividends and share repurchases over the tax regimes considered.

4.3.3 Prior to September 21, 1994

In the UK, a partial imputation system was introduced in 1973 to relieve double taxation for investors: Advance Corporation Tax (ACT).[95] Corporations could deduct ACT from the gross mainstream corporation tax for the accounting period in which the dividends were paid to arrive at the corporation tax payable. ACT offset was only possible up to a certain

[89] In the June 2010 Budget, the amount has increased to £5m.
[90] Capital losses may also be offset by losses brought forward from an earlier period for both companies and individuals (in the latter case, if brought forward from an earlier tax year rather than accounting period).
[91] See Taxation of Chargeable Gains Act, 1992, 192A.
[92] See Taxation of Chargeable Gains Act, 1992, Schedule 7 AC, para 1.
[93] Notably, it has been argued that corporations take the tax position of important investors into account when making dividend decisions (Short, Zhang, and Keasey, 2002).
[94] The Capital Gain Tax Treatment differs also for trusts.
[95] Finance Act 1972, s. 84(1).

limit, namely the ACT together with the net dividend paid should equal the company's current taxable profits (Gammie, 1998). ACT exceeding this limit was referred to as 'surplus ACT' and could be carried backward and forward.[96] Nevertheless, if a company's corporate tax liability persistently lagged behind the amount of its ACT payment, the option expired (Banks, Cheffins, and Goergen, 2004). Hence, if the taxable profits were not sufficient or stemming from overseas, corporations were not able to relief ACT fully and faced what is known as the surplus ACT problem (Shirley, 1997).

Dividends

The income tax on dividends payable depended on the status (and overall income) of the recipient. Individual shareholders received an imputation tax credit that represented the tax paid by the corporation. In case an imputation tax credit was attached to dividends, they were referred to as 'qualifying distributions' according to section 14 of the Corporation Tax Act 1988. The grossed-up dividend would then be added to the individual's income.[97] For all but one year during existence of the ACT, the ACT rate and tax credit were linked to the basic (and lower)[98] rate of income tax with a starting rate in 1973 of 30% (Harris, 18 June 2010).[99] In the tax year 1993-94, however, the ACT rate and tax credit were both equal to 22.5%, while the basic rate of income tax payable on dividends was equal to 20%. For lower and basic rate individuals, the tax credit would discharge the liability created by the grossed-up dividend. For individuals subject to the higher rate of income tax, additional tax payments were required equal to the higher rate on the gross dividend less the tax credit. Interestingly, the imputation tax credit was partially refundable for nonresident investors that qualified for special tax treaty provisions, and fully refundable to tax-exempt shareholders (pension funds, insurance companies with respect to their pension business and individuals holding shares through Personal Equity Plans), due to Section 231(1) ICTA 1988 that grants the recipient of a

[96] Income and Corporation Taxes Act 1988, s. 239(3). Surplus ACT could be carried forward indefinitely and backward up to six years. It could under certain circumstances also be surrendered to majority owned subsidiaries. Shadow ACT rules were introduced to detail the treatment of surplus ACT that has been built up before 6 April 1999. For more details, see: Practical Law Company, 2010: 'Practice note, Shadow ACT'.

[97] The grossed-up dividend is the sum of the net dividend received plus the associated tax credit.

[98] Finance Act 1993, Ch. 34, s. 78(1). Note: The lower rate of income tax is applicable in the financial years after 1993.

[99] Income and Corporation Taxes Act 1988, s. 14(3). Note: ACT on a qualified distribution of a UK-resident corporation was calculated as I/(100-I), with I being the percentage at which income tax at the basic rate was charged in the current year.

dividend the associated tax credit. Accordingly, UK pension funds were not liable to taxation on investment income (interest or dividends) received, but were passed on a tax credit that they could use to obtain a full cash refund. Corporations were also exempted from corporation tax on UK dividends, but did not receive tax credits on dividends from UK companies.[100] In fact, if companies received dividends, the ACT payment was reduced accordingly.[101]

Share Repurchases

While in broad terms the exclusive repayment of capital on shares did not form a distribution and therefore had no tax consequences, the extent to which the repurchase price exceeded the original purchase price was treated as a distribution that qualified for ACT relieve.[102] The corporation had to pay ACT on this 'distribution element' and could then forward a tax credit to the shareholder, who could use it to offset personal taxes. At the same time, a capital loss could be calculated equal to the difference between the investor's cost base (original purchase price plus an indexation allowance) and the original issue price of the share. Individual shareholders who sold their shares were taxed at their personal income tax rate on the value of the repurchase, but received the tax credit. The personal income rate in 1993 was 20% for the basic- and 40% for the higher rate of income tax. Pension funds received a tax credit of 25% on the distribution element, despite being tax-exempted on capital gains. Corporations, however, were liable to capital gains tax (CGT) on the distribution element. CGT was levied at the rate of Corporation Tax (which was equal to 33% in 1993). As in the case of individual shareholders, corporations were given a tax credit and were able to subtract a capital loss.

Conclusion

We summarize the situation prior to the September 21, 1994 in panel A of Table 4-3.[103] From our calculations (see Appendix A) we conclude, that lower and basic rate individuals as

[100] Foreign dividends were taxable but gave rise to a tax credit, either under UK domestic provisions or under a double taxation treaty.
[101] For a company, ACT payable was calculated as: ACT fraction x (dividends paid - dividends received).
[102] The tax treatment of shareholders is affected in case a third party acts as principal, or if the repurchase is done by an unquoted company.
[103] Rau and Vermaelen (2002) report the first observation of 'agency buybacks' (see below) on September 21, 1994.

well as higher rate individuals prefer share repurchases for tax reasons . In contrast, pension funds and corporations should have preferred dividends to share repurchases in this period. In addition, pension funds should have developed a strong preference for dividend distributions (with the associated tax credit) over share repurchases and over retaining profits (which generated no tax credit). This is in line with Rau and Vermaelen (2002: 246), who conclude that: 'prior to 1994, open-market share repurchases were unattractive for pension funds (relative to dividends and relative to repurchase tender offers).'

[Insert Table 4-3, about here]

4.3.4 From September 21, 1994 - October 7, 1996

Dividends

While both the rate of ACT and the associated tax credit had been reduced in 1993 to 22.5%, they were further cut to 20%, in April 1994. For lower rate tax-individuals, this was equal to the income tax rate on dividends. The income tax rate for high tax-bracket individuals was still 40%. As before, the imputation tax credit was fully refundable to tax-exempt investors, such as pension funds. In addition, corporations were not liable to corporation tax on UK dividends, but did not obtain a tax credit.

Share Repurchases

In September 1994, investment banks invented the 'agency buyback,' an innovative mechanism that increased the tax attractiveness of stock repurchases in the open market. Shareholders sold their shares to a broker who acted as an agent for the company. The agent contacted pension funds (and other tax-exempt parties such as charities) up-front and prioritized them over non tax-exempt institutions. This way, agency buybacks resembled off-market repurchases and provided these tax-exempt investors with the opportunity to claim a tax credit on the distribution. During the period from September 1994 to October 1996, Rau and Vermaelen (2002) report an increase in buyback activity presumably of tax-exempt investors such as pension funds. Individual shareholders kept receiving the tax credit and the ability to subtract capital losses, but were taxed at their personal income tax rate, which remained unchanged at 20% and 40%, respectively. Pension funds still received the tax credit

of 25% on the distribution element, despite being tax-exempted on capital gains. In the case of corporate shareholders, corporations were still required to pay ACT on the distribution element at a rate of 33%. Corporate shareholders received the associated tax credit, and although they could deduct it from their mainstream Corporation Tax, the effect was probably negligible due to the fact that ACT only affected the timing of tax payments, but not the gross mainstream Corporation Tax liability (Devereux, Griffith, and Klemm, 2004).

Conclusion

Individual investors lost part of the tax credits that were formerly granted on dividends. Share repurchases were still relatively more attractive to individual investors. Through the invention of the agency buyback, i.e. the idea to structure transactions in a way that allowed to 'transfer the tax credit from taxable to tax exempt shareholders' (Gammie, 1998: 434), share repurchases became more attractive than dividends to pension funds (and charities and trusts) that intended to sell. Overall, corporations still preferred dividends to share repurchases due to the attached tax credits. We summarize the situation between September 1994 and October 1996 in panel B of Table 4-3 (See also: Appendix A).

4.3.5 From October 8, 1996 – July 1, 1997

The tax authorities closed the loophole of the agency buyback that enabled investors to claim tax-credits on share repurchases. On 8 October 1996 the law was changed such that tax-exempt shareholders were not longer entitled to a repayment of the tax credits associated with a repurchase of shares. However, they were still able to claim the tax credit on dividends in case they were not linked to a transaction in securities.

Dividends

The changes in UK tax law that were introduced in October 1996 had no effect on the specific treatment of dividends.

Share Repurchase

From 8 October 1996, tax-exempt investors, such as pension funds, charities, and trusts, could no longer recover tax credits associated with the distribution element of share

repurchases.[104] Accordingly, the attractiveness for pension funds to engage in share repurchases was reduced substantially.

Conclusion

The tax changes introduced in October 1996 solely affected the treatment of tax-exempt investors (see Panel C of Table 4-3). While individuals preferred dividends to share repurchases, dividends were also the more profitable payout method for both corporations and pension funds. The abolition of the loophole by the tax authorities reduced primarily the preferences of tax-exempt investors such as pension funds to engage in share repurchases. Buybacks were no longer more attractive for tax-exempt investors than dividends. In other words, dividends became more interesting to tax-exempt investors than share repurchases. Consequently, the number of open-market repurchase completions fell significantly (Rau and Vermaelen, 2002).

4.3.6 After July 1, 1997

Dividends

On July 2, 1997, the new government radically reformed the taxation of dividend income in the UK. The main effect of this Finance Act (FA97) was to abolish the right of pension funds to be repaid the imputation tax credit for dividends, and therefore on any distribution.[105] The main effect was an immediate and significant drop of the valuation of dividend income for pension funds (Bell & Jenkinson, 2002). In view of pension funds loosing the repayment of the tax credit, the main corporation rate was reduced from 33% to 31%. FA97 had, however, no immediate dividend tax implications for other investor groups. There were no changes to the rates of imputation credit or income tax and thus no changes to the dividend tax burden of individual shareholders (Hughes, 1998). Similarly, tax-exempt charities, tax-favored personal equity plans (PEPs), non tax-paying individuals, and treaty-protected investors continued to enjoy the pre-budget regime of refundable tax credits.

[104] Finance Act 1997, Schedule 7.
[105] Finance (No.2) Act 1997, s. 19F.

Share Repurchase

The changes in UK tax law of July 1997 had no effect on share repurchases.

Conclusion

The tax change introduced in 1997 had an immediate and substantial effect for pension funds: As they were no longer allowed to reclaim the imputation tax credit on dividends, their valuation of dividends was immediately and substantially reduced. Accordingly, the relative attractiveness of share buybacks rose again, resulting in a higher number of open market repurchases (Rau and Vermaelen, 2002; Oswald and Young, 2004). Rau and Vermaelen (2002) suggest that the change in tax law led to pension funds now being indifferent between dividends and open market share buybacks. We summarize the situation after July 1997 in Panel D of Table 4-3. Notably, after April 6, 1998 individuals were able to claim a taper relief that reduced the amount of gain subject to capital gains tax. There was no change for corporations, however, as they could continue to use the indexation allowance.

4.3.7 After April 6, 1999

The UK tax authorities abolished Advance Corporation Tax on 6 April 1999 - a radical and far-reaching decision that marked the return to a classical taxation system.[106]

Dividends

Along with the abolishment of the Advance Corporation tax (ACT), the tax credit on dividends for individuals was cut to 10%. The tax burden of individuals was, however, not affected because of a simultaneous cut in the basic income tax rate on dividends to 10%.[107] In addition, the tax rate on dividend income for high-bracket individuals was reduced to 32.5%.[108] The tax reform affected also other types of investors: tax-exempt investors were no longer able to claim credit repayments from the treasury, but compensatory payments as a percentage payment of their dividend income were granted to charitable investors over a transitional period until 2003-2004 (Bell & Jenkinson, 2002). Moreover, non-resident investors benefiting

[106] ACT that had been accumulated before April 6, 1999 could be relieved through a system of Shadow ACT. Transitional relief was provided for charities (Finance (No. 2) Act 1997, s. 35).
[107] Finance (No. 2) Act 1997, s. 31.
[108] Finance (No. 2) Act 1997, s. 31(5).

from special tax treaty provisions were no longer able to claim credit repayments - for them the value of dividends fell by 6% (Bell & Jenkinson, 2002). Corporations no longer had to account for ACT on dividends paid. For companies that had built up surplus ACT in the past, however, a system of shadow ACT was introduced that thereafter limited the recovery of accumulated ACT by companies. Advance Corporation Tax was replaced by quarterly installment payments of Corporation Tax by large companies to compensate the exchequer for lost revenue (Hughes, 1998).

Share Repurchase

By the abolition of ACT, companies are no longer required to account for ACT on the distribution element of share repurchases. UK resident corporate shareholders that receive dividends and other distributions continue to be exempted from Corporation Tax. The main rate of Corporation Tax was cut to 30% from 1 April 1999.

Conclusion

After the abolition of Advance Corporation Tax (ACT) in 1999, the after-tax values of the various payout methods to different investors changed significantly (see panel E of Table 4-3). Lower and basic rate individuals, as well as higher rate individuals supposedly preferred share repurchases to dividends. The situation for pension funds was not affected. As before, they were indifferent between both forms of payout. While the after-tax value of share repurchases to corporations increased slightly, the after-tax value of dividends was still high. Accordingly, corporate shareholders preferred dividends to share repurchases.

4.3.8 Since 2002

For a UK-resident company, the entire buyback price is taken into consideration for the calculation of the chargeable gain. The introduction of the Substantial Shareholdings Exemption (SSE) in 2002 affected the taxation of capital gains.[109] In fact, any arising gain may be tax-exempted if the conditions for the SSE are met.

[109] The changes were introduced by the Companies (Acquisitions of Own Shares) (Treasury Shares) Regulations 203, SI 2003/1116.

Dividends

The changes in UK tax law of 2002 had no effect on dividends.

Share Repurchase

On April 1, 2002, a Substantial Shareholdings Exemption (SSE) for capital gains tax was introduced. This exempts from the assessment of capital gains for shareholdings of 10% or more of the shares in another company. Accordingly, any gain arising may be exempted from CGT if the sale satisfies the conditions of the SSE.

Conclusion

The introduction of SSE affected the taxation of capital gains and is therefore likely to have contributed to a greater preference for share repurchases (see Panel F of Table 4-3). While individual investors prefer share repurchases to dividends, pension funds and other tax-exempt investors have no preference for a certain payout channel. Corporations, however, prefer dividends to share repurchases. Table 4-4 summarizes the treatment of share repurchases and dividends for different types of shareholders over time.

[Insert Table 4-4, about here]

4.3.9 Conjectures

The many tax reforms in the UK give us the opportunity to investigate whether tax changes affect corporate payout decisions as previous research suggests (Short, Zhang, and Keasey, 2002, Perez-Gonzalez, 2002). In particular, our data set covers three important changes: 1) the introduction of the Finance Act in 1997, 2) the abolishment of Advanced Corporation Tax in 1999, and 3) the introduction of the Substantial Shareholdings Exemption. The associated tax changes provide an ideal natural experiment for analyzing the effect of taxation on corporate payout.

The main result of the FA97 was a significant drop in the valuation of dividends to pension funds with a corresponding rise in the attractiveness of share buybacks (Bell and

Jenkinson, 2002, Oswald and Young, 2004). According to Rau and Vermaelen (2002), this led to pension funds being indifferent between both dividends and share repurchases.

Abolishing ACT results in a higher after-tax value of share repurchases to individuals, but also a higher attractiveness of dividends to corporations. Given the simultaneous cut in the basic income tax rate on dividends for individuals and the relatively large ownership stake of corporations, the latter effect should be dominating.

The SSE exempts corporations from the assessment of capital gains tax for shareholdings equal to and above 10% in another company. Consequently, we conjecture that the attractiveness of dividends was reduced in 1997, rose again in 1999, and then developed into a less attractive payout method when compared to share repurchases in 2002 (C1).

The calculated after-tax values suggest that individuals prefer share repurchases to dividends since 1996; pension funds show a preference for dividends before 1997 (but became neutral with respect to both payout methods subsequently); and corporations prefer dividends to share repurchases over all years considered. Based on the calculated after-tax values of both dividends and share repurchases to various types of investors, we conjecture that individuals (including executive and non-executive directors) prefer share repurchases, while corporations and financial institutions (including pension funds) prefer dividends (C2).

Based on a first impression and a simple calculation of the differences in the after-tax values of the various payout methods, we conjecture that the appeal of share repurchases to individuals was reduced during 1999 and 2002, but increased thereafter; the appeal of dividends to pension funds was reduced in 1997, but both payout methods were equally attractive to pension funds thereafter; and the desirability of dividends to corporations decreased during 1999 until 2002, and remained stable, thereafter (C3).

How do changes in the relative tax burden of dividends and capital gains affect the level of dividend payout? In general, the reduction of a tax on dividends may affect corporate dividend payout. At the same time, a dividend cut affects the relative tax burden of dividends and capital gains. Literature states that dividend taxes reduce corporate investment and lead to a rise in dividend payout (Poterba and Summer, 1985, Poterba, 2004). Consequently, we conjecture that the relative tax burden of dividends and capital gains positively affects the level of dividend payout (C4).

A relatively recent stream of the literature suggests that executive remuneration may be linked to the payout decision of a firm (Fenn and Liang, 2001, Bebchuk, Fried, and Walker, 2002, Liljeblom and Pasternack, 2007, Geiler and Renneboog, 2012). For example, Fenn and Liang (2001) find evidence that stock options are in a negative relation with the decision of the firm to issue dividends, but in a positive relation with share repurchases. Liljeblom and Pasternack (2007), based on the analysis of a unique Finnish dataset, show that the negative relation between stock options and dividends does not exist in the case of dividend protection. Geiler and Renneboog (2012) argue in line with Bebchuk et al. (2002), that executive stock options may be used to extract wealth from the firm without causing much outrage. In sum, literature suggests a relation between executive remuneration and the payout decision. Consequently, we correct in our analysis for various components of pay.

Sentiment may also be linked to the payout decision: the literature on sentiment broadly differentiates between market sentiment and investor sentiment. A proxy for market sentiment has been proposed by Baker and Wurgler (2004): they suggest to measure the 'taste for dividends' in a market – typically referred to as 'Dividend Premium'– by calculating the difference in the logarithms between the average market-to-book ratio of dividend payers and nonpayers. The idea of the dividend premium is that firms cater to this sentiment by issuing dividends. Likewise, investor sentiment refers to the idea that behavioral biases on the side of the investor may be prevailing: overconfident investors may act on their overestimated knowledge of the value of an investment and consequently trade more (Odean, 1998, Barber and Odean, 2001, Gervais, Heaton, and Odean, 2003). Likewise, investors may believe in 'momentum' and thus keep on buying stock that has recently gained in value, and simultaneously sell stock that has recently lost in value, thereby assuming that existing trends of the stock price will continue (Carhart, 1997). Hence, to take various measures of sentiment into account, we include in our regressions dividend premium, the trading volume of the stock, and momentum.

Lastly, we also correct for various other payout determinants by correcting for firm size and the growth opportunities of a firm, by including the index membership of a firm (FTSE100, FTSE250, FTSE Small Cap, FTSE Fledgling) and Market-to-Book, for firm performance, leverage, and firm risk, by including ROA, Debt/Assets, and Var(CF) – the variance of cash flow , for the level of cash flow, by including Free Cash Flow/Assets, as well

as for various governance characteristics, such as boardsize and the percentage of female directors on the board. Moreover, to tap into the direction of managerial sentiment, we include the age, gender, and tenure of a CEO, as well as our dividend surprise measure, calculated as the difference between the actual dividend paid and the estimated 12-month forward dividend lagged by one year. We assume a CEO to be optimistic about the future of the firm, if he issues a dividend that exceeds the forecast of the analysts, and vice versa.

4.4 Methodology and Data

4.4.1 Sample Selection and Data Sources

Our sample comprises most of the UK companies listed on the London Stock Exchange (LSE) and Alternative Investment Market (AIM). We have payout information for 1906 companies and 9596 firm-years. The sample comprises companies, which are included in the FTSE100, FTSE250, FTSE SmallCap, FTSE Fledgling, and FTSE AIM.[110] Our sample period extends from 1996 (following the release of the Greenbury Report in 1995[111]) to 2007.

We collect the cumulative gross year-end dividend paid (05101) and a 12-month forward dividend per share from Datastream Advance. The actual share repurchases are gathered from Bureau van Dijk's Zephyr database, which we have double-checked with information stemming from Capital IQ. The remuneration data on CEOs, non-CEO executives, and non-executive directors comprise fixed salary, bonus, and equity-based pay, miscellaneous remuneration, and other pay components and is collected from BoardEx, Manifest and annual reports. The dataset on the executive and non-executive directors comprises information on their position, gender, tenure, and ownership stake. The ownership concentration is collected from Thomson One Banker and PricewaterhouseCoopers. The accounting information (e.g. total debt, total assets, market-to-book, ROA, EBIT), the sector aggregation, and trading information (price of the stocks and volatility) stem from Datastream Advance. We also calculate the Fama-French-Carhart four factors (market return, size or SMB, book-to-market or HML and momentum) by means of data from the Style Research Markets Analyzer.

[110] FTSE Fledgling and FTSE Alternative Investment Market overlap partially. Firms listed on these two indices are usually not included in the FTSE All-Share index, which is the aggregation of FTSE100, FTSE250, and the FTSE SmallCaps.

[111] Available online at: http://www.ecgi.org/codes/documents/greenbury.pdf.

We adjust the accounting and remuneration information in case the reported length of the financial year deviates from the standard 365 days. Moreover, when a financial year is not coinciding with the calendar year, we apply the following rule: if the reported end of the financial year lies within the first (last) six month of a given year, we assume the entry belongs to the preceding (current) calendar year.

4.4.2 Multinomial Logit Model

In order to examine whether changes in tax regulations affect corporate payout decisions, we estimate a multinomial logit model (MNL) with as dependent variable the payout channel choice (dividends, share repurchases, a combination of dividends and share repurchases[112], and no payout). We choose the MNL over the multinomial probit model (MNP) as i) recent results have shown that the simpler logit model is often preferable to the more complex probit (Dow and Endersby, 2004), ii) the MNP is likely to suffer from a number of estimation problems, including weak identification in application, and iii) we are able to test our results with a Hausman test for the existence of the IIA property. The explanatory variables include taxation periods, ownership concentration interacted with the tax regime dummies, as well as managerial remuneration, investor sentiment, and other control variables. We assume that there is no natural ordering of the payout alternatives and that the decision maker maximizes his own utility. We do not assume random taste variation and no correlation of unobserved disturbances over time. Therefore, we apply a log Weibull distribution, assuming that the error terms per individual and alternative are independently distributed and homoscedastic. We test for the independence of irrelevant alternatives (IIA) property with the Hausman and McFadden (1984) test, which compares the estimate using all alternatives to the estimate of a subset of alternatives. The systematic part for our multinomial logit regression reads as follows:

$$\mu_{it} = \alpha + \beta_1 \times Taxation\ variables_{it} + \beta_2 \times Ownership\ variables_{it} + \beta_3 \times$$

[112] We combine the share repurchases and the combination of repurchases and dividends into one category as there are very few observations on the former subcategory.

$$Remuneration\ variables_{it} + \beta_4 \times Sentiment\ variables_{it} + \beta_5 \times Other\ Determinants_{it} + \sum_{k=1}^{12} \gamma_k \times Industry_k .$$ [113]

where μ_{it} is the systematic part of our utility estimation per individual i and time t, which, together with the unobservable error part ε_{it}, makes up the utility of a payout alternative to the decision maker U_{it}. The Taxation variables consist of time indicator variables capturing the main tax changes within our sample period. Moreover, we use the following ownership variables related to control: CEO ownership, Non-executive ownership, Institutional ownership, Individual and Families ownership, Industrial ownership and Pension fund ownership. We include both the variables themselves and their interactions with each tax period. The Remuneration variables include total salary, fees, bonus, stock options and restricted stock, miscellaneous pay (e.g. recruitment bonus, severance pay) and other components of pay (e.g. insurances) – all adjusted for assets. The Sentiment variables include the Dividend Premium (logarithm of the average the market-to-book ratio of dividend payers minus the logarithm of the average market-to-book ratio of non-dividend payers (Baker and Wurgler, 2004)), the Trading Volume of stocks over shares outstanding, and Momentum. We also include firm size (e.g index membership FTSE100, FTSE250, FTSESmallCap), performance and risk (ROA, Market-to-book, Free Cash Flow over assets, Debt/Assets, and Var(CF)). Finally, we also control for internal corporate governance variables (board size, board independence) and CEO characteristics (percentage of female board members, CEO gender, CEO age and tenure).[114]

4.4.3 Relative Attractiveness Model

In an alternative estimation, and in extension to our main model, we replace the taxation regime variables in our MNL by a measure that captures the relative attractiveness of dividends and share repurchases from a tax perspective. This more advanced model allows us to tap into the idea of relative attractiveness between the payout alternatives. The actual relative payout attractiveness measure is as follows:

[113] In our multinomial regression analysis, we cluster all the standard errors on the firm level.
[114] The appendix gives all the abbreviations and definitions of the variables used.

$$\theta_{h,t} = w_{h,t}\left[\left(1 - \tau_{div,h,t}\right)/\left(1 - \tau_{cg,h,t}\right)\right],$$

where $\theta_{h,t}$ is the relative payout attractiveness by investor type h (individuals, corporations, pension funds] at time t, τ_{div} is the marginal tax rate on dividends, and τ_{cg} is the marginal tax rate on capital gains – as stemming from share repurchases, and $w_{h,t}$ refers to the percentage of stock owned by investor h at time t. In other words, the relative payout attractiveness measure is the product of an investor category's ownership concentration and the after-tax value of dividends over the after-tax value of share repurchases for each investor category.

4.4.4 Dynamic Probit Model

Do changes in taxation rules affect the decision of using share repurchases (usually on top of dividend payments)? We employ a dynamic binary probit model on our panel dataset focusing solely on firms that decided to payout.[115] Our dependent variable is a binary variable indicating whether a firm chooses for: 0) share repurchases, and the combination of dividends and share repurchases, or 1) dividends. A typical problem with a data set consisting of a large number of observations and a limited number of time periods is that the issue of initial conditions cannot be safely ignored. It is typically the case that a company that has decided to pay out dividends in the past, is more likely to continue to use this distribution method. Table 4-5 indicates that while only about 54% of all firms that paid out share repurchases in the past continue to do so, the corresponding figure for dividend paying firms is approximately 94%.

According to Verbeek (2004), there exist two possible explanation for this: 1) state dependence, i.e. the longer a firm has paid out dividends, the less likely it is to change its payout method, and 2) unobserved heterogeneity, i.e. firms with certain unobserved characteristics are more likely to pay dividends. Allowing for dynamics in the underlying process helps to derive consistent estimates for the impact of our independent variables (Bond, 2002). Consequently, we employ a dynamic probit model to allow for both state dependence and the initial conditioning problem: including a lagged version of our dependent variable

[115] Table 4-10 hints at some state dependence, i.e. the longer a company pays out a dividend the less likely it may reverse this decision. For this reason, we estimate a dynamic probit model and thus include past dividend payout. Of course, the state dependence may also be driven by a number of firms and their unobserved characteristics, also referred to as unobserved heterogeneity. In other words, a number of firms have unobserved characteristics that make it less likely for them to stop paying out a dividend.

helps us to take care of state dependence. Likewise, the firm-specific effect α_i captures unobserved heterogeneity. Hence, our model looks as follows:

$$Div_{it}^{*} = \beta_1 \times Div_{i,t-1} + \alpha_i + \beta_2 \times Taxation\ variables_{it} + \beta_3 \times Remuneration\ variables_{it} + \beta_4 \times Sentiment\ variables_{it} + \beta_5 \times Other\ Determinants_{it} + \sum_{k=1}^{12} \gamma_k \times Industry_k + \varepsilon_{it}$$

where a CEO decides to payout dividends if $Div_{it}^{*} = 1$ and share repurchases as well as the combination of dividends and share repurchases, otherwise. In addition to the variables listed in the above subsection, we include past dividend payout (versus other payout): $Div_{i,t-1}$. The random effects probit model uses a GLS random-effects estimator (Woolridge, 2005).

[Insert Table 4-5, about here]

4.4.5 Aggregate Dividend Payout

As a third step, we use an adjusted Lintner (1953) model, in the spirit of Poterba (2004), to examine the effect of the relationship between dividends and capital gains on the aggregated dividend payout. Poterba (2004: 171) argues: 'The standard approach to measuring the relative tax burden on dividends and capital gains assumes that each investor's tax parameters affect the aggregate tax preference for dividends versus capital gains in proportion to the investor's ownership of corporate stock.' Therefore, we calculate for each company the aggregated weighted-average payout preference parameter, which is defined as:

$$\theta_t = \sum_h w_{h,t}\left[\left(1 - \tau_{div,h,t}\right)/\left(1 - \tau_{cg,h,t}\right)\right]$$

where θ_t refers to the aggregated dividend tax preference parameter, τ_{div} is the marginal tax rate on dividends, and τ_{cg} is the marginal tax rate on capital gains, and $w_{h,j}$ refers to the percentage of stock owned by a certain investor h at time t. Contrary to Poterba (2004), who focuses solely on taxable household stock holdings, we calculate the aggregated tax preference parameter separately for individual investors (which we assume to be taxed at the higher rate),

pension funds, and corporate investors, based on the after-tax values for each of the tax regimes (see Appendix A). Table 4-6 shows that the after-tax value of dividends relative to capital gains has remained in the range of 8-12% for individual investors over the years considered. Particularly in the years from 2000-2002, we find the tax preference parameter to be leaning more strongly towards dividends. Due to the low amount of large ownership stakes held by pension funds over the years, the tax preference parameter does not reveal the effect of the tax change in 1997/1998.[116] As for corporate investors, we find the tax preferences parameter to be in the range of 28-36% and to be more volatile (than for the other groups of investors). This is due to the high ownership concentration of corporations on the one hand, and to the strong after-tax advantage of dividends when compared to share repurchases on the other hand. The entries in the last column of Table 4-6 suggest that there has been an increase in the after-tax value of dividends versus share repurchases for corporations over the time period considered, although we find the applicable rate of corporation tax on share repurchases to be reduced (cf. Table 4-4).

[Insert Table 4-6, about here]

To examine the impact of the tax preference parameters on the aggregate level of dividend payout, we follow the approach of Poterba (2004) and Lintner (1953), and relate the annual change in the level of dividends to the change in profits, in the tax preference parameters, as well as to lagged levels of these variables. Hence, we employ the following model:

$$\begin{aligned}\Delta lnD_t = {} & \beta_0 + \beta_1 \times \Delta\, ln(ROA)_t + \beta_2 \times \Delta ln\theta_{Individual,t} + \beta_3 \times \Delta ln\theta_{Pensionfund,t} + \beta_4 \\ & \times \Delta ln\theta_{Corporation,t} + \beta_5 \times lnD_{t-1} + \beta_6 \times \Delta ln(ROA)_{\,t-1} + \beta_7 \\ & \times \Delta ln\theta_{Individual,t-1} + \beta_8 \times \Delta ln\theta_{Pensionfund,t-1} + \beta_9 \times \Delta ln\theta_{Corporation,t-1} \\ & + \varepsilon_t\end{aligned}$$

where ΔlnD_t stands for to the annual change in dividends, $\Delta\, ln(ROA)_t$is the current change in the natural logarithm of profit (as measured by RoA), $\Delta ln\theta_{Individual,t}$, $\Delta ln\theta_{Pensionfund,t}$, and $\Delta ln\theta_{Corporation,t}$ refer to the relative tax burden on dividends versus capital gains for individuals, corporations, and pension funds, respectively. In addition, we include lagged

[116] Our analysis may not be fine enough to reveal this effect, though, as we do not pick up ownership states with a concentration below 3%.

levels of dividends, ROA, and the relative tax burdens. To solve the issue of negative earnings in a log-log specification, we follow Poterba (2004) and restrict our sample to observations with a positive ROA.

4.5 Results

Do tax changes affect corporate payout decisions? The multinomial logit analysis in Table 4-7 shows that the coefficient for tax period 1 (1997-1998) is positively associated with dividend payout versus no payout at the 5%-level of significance. The corresponding coefficient is 0.973. At the same time, the coefficient of Panel B indicates again a preference for dividends. We find a coefficient of -0.792, which is statistically significant at the 10% level. As for the coefficient of tax period 2 (1999-2001) on dividend payout, we also find it to be positive and significant, albeit somewhat lower than in the case of tax period 1 (0.3). The associated marginal effects indicate that tax period 1 and 2 are associated with an 8% and 3% increase in dividend payout versus retention. The other 2 coefficients for tax period 2 (Panel A and Panel B) indicate a strong tendency away from share repurchases. The corresponding coefficients of -2.377 and -2.709 are significant at the 1% level. The marginal effects confirm this tendency at the 1% level of significance. These findings are in line with our Conjecture 1 (C1), in that dividends are preferred to retention, and share repurchases are avoided – as consequences of the associated tax changes of FA97 and the abolition of ACT.

[Insert Table 4-7, about here]

We also find that CEOs with larger ownership stakes prefer earnings retention over paying out dividends. Moreover, we find individuals and families' ownership to be positively related to dividend payout versus retention (at the 10%-level) and negatively related to the decision for share repurchases versus dividends (at the 5%-level). This indicates that individual and families' ownership has generally a tendency to be associated with dividends rather than share repurchases. Concerning industrial ownership, we again find a strong tendency towards retention with both coefficients for dividends versus retention and share repurchases versus retention negative and significant at the 1%-level and the 5%-level, respectively. Industrial ownership seems to be positively associated with retention rather than with any form of payout. These findings contradict our Conjecture 2 (C2).

As has been shown previously, there is a strong negative association between CEO option holdings and the decision to payout dividends and a strong positive link with the decision to payout share repurchases versus dividends. Both results are significant at the 1%-level and indicate that CEOs with option holdings avoid dividend payout and have a strong preference for share repurchases, instead. Interestingly, this argument is partially supported by the fact that CEOs with a higher number of restricted stock ownership seem to avoid dividend payout – a finding that is significant at the 10%-level.

When considering our sentiment variables, trading volume over shares outstanding seems to be strongly associated with the decision to engage in share repurchases both versus retention and dividends and is simultaneously strongly negatively related towards the decision to payout dividends. Unfortunately, we find the dividend premium to be non-significant. Regarding our controls, we find that listings on the FTSE100, the FTSE250 and the FTSE Fledgling are all positively associated with the decision to issue dividends versus no payout. This relation seems to become stronger with the size of the index. Consequently, we find only in the case of the FTSE100 a positive link with the decision to pay out share repurchases – both versus retention and versus dividends. The size effect seems to play a role here, as we find a listing on the FTSE Fledgling to be negatively related to the decision to issue share repurchases versus dividends.

Our profit measure return on assets (ROA) seems to be an important determinant of the payout decision. Comparing the coefficients of the two payout channel choices versus retention, we find that profit seems to be more important in the case of share repurchases than when deciding about dividends. Free cash flow seems to be another important determinant of the payout decision: the coefficients are positive and highly significant in all three cases. However, for the decision between share repurchases and dividends, lagged free cash flow over assets seems to be less important than in the other two cases. Our growth perspective, as measured by market-to-book ratio, is positively and significantly related with the decision to payout dividends. Likewise, we find higher leverage to be negatively associated with the decision to engage in share repurchases versus dividends. This finding is significant at the 5%-level. Considering our risk measure variance of cash flow (Var(CF)), we find a positive coefficient for the decision to payout dividends versus retention at the 10%-level of significance. Surprisingly, the CEO being a male is negatively related to the decision for share

repurchases and versus dividends, indicating that female CEOs are more likely to engage in share repurchases than male CEOs. However, the age of the CEO is positively related with the decision for dividends versus retention and negatively associated with the decision for share repurchases versus dividends. CEO tenure is positively related to the decision for dividends (at the 5%-level) and positively associated with the decision for share repurchases (at the 5%-level). In other words, older CEOs with a higher tenure are more likely to decide for dividends, while older and masculine CEOs seem to avoid engaging in share repurchases (versus dividend payout).

[Insert Table 4-8, about here]

Table 4-8 presents similar results for the decision between dividends, share repurchases and no payout when taking into account tax period 2 (1999-2001) and tax period 3 (2002-2007) versus the (omitted) base tax period 1 (1997-1998). As before, tax Period 2 seems to be negatively related to the decision for share repurchases versus tax period 1. Again, this tendency is confirmed by an analysis of the corresponding marginal effects. Tax period 3 is negatively associated with the decision for dividends versus retention compared to our base period. The marginal effects show that tax period 3 is associated with an 8% reduction in dividends versus retention. This is again in line with Conjecture 1 (C1) that the attractiveness of dividends rose during the years 1999-2001, but that they became less attractive a payout method, afterwards. All the other coefficients are in line with our earlier results. The only differences we are able to identify are that we find dividend premium to be positively related towards the decision for share repurchases versus dividends, albeit only at the 10%-level, and that we fail to find the positive association between our risk measure and the decision for dividends versus retention to be non-significant.

[Insert Table 4-9, about here]

However, on top of the main effects of our tax period dummies and our ownership variables, we are interested in the effects of 14 tax-ownership interactions. These interaction effects tell us how each of the ownership effects differ by tax periods. We therefore estimate a saturated model, the results of which are shown in Table 4-9. The regression yields a log-

likelihood ratio of -1865.104 with an associated R2 of 0.612 for 4376 observations. From this, we conclude that adding the interaction terms has slightly improved the model.

The coefficients of our tax period dummies corroborate our earlier findings: during the years 1999-2001, the trend goes away from share repurchases, both versus retention and versus dividends. The corresponding coefficients of -3.143 and -3.538, respectively, are highly significant. The other coefficients remain insignificant, however. Still, this is partly in line with our Conjecture 1 (C1) that the attractiveness of dividends versus share repurchases rose during tax period 2.

Similarly, the main effects for the various ownership variables are largely comparable to our previous results (see Table 4-7): the coefficients for the dividend versus retention choice are for CEO ownership -0.022 versus -0.021 in the former case, for individuals and families' ownership 0.029 versus 0.027, and for Industrial ownership -0.025 versus -0.026 in the model discussed above, respectively; for the choice between share repurchases and retention, we find for Industrial ownership -0.019 versus -0.020 in the model excluding the interaction terms. When considering the choice between share repurchases and dividends, it appears that it is still negatively related with individual and families' ownership: the coefficients have changed from -0.054 in the case excluding interactions to -0.059 in the latter case. In sum, the results contradict our Conjecture 2 (C2) that individuals prefer share repurchases, while corporations and financial institutions prefer dividends. The results for the remuneration and sentiment determinants remain largely unaffected. In particular, we find executive stock options to be negatively related with the dividend decision (versus retention) and positively associated with the repurchases versus dividend decision. Among our sentiment variables, trading volume decreases with dividend payout and increases with the decision to payout share repurchases. Likewise, we find the coefficients of our other determinants to be upheld.

Institutional owners prefer share repurchases to retention during the years 1999-2001. This interaction effect between institutional ownership and tax period 2 is greater and stronger than the negative coefficient of the main effect of institutional ownership. The corresponding coefficient of 0.063 is significant at the 1% level. Likewise, institutional ownership during tax period 2 is positively associated with the decision towards share repurchases versus dividends. The coefficient of 0.054 is highly significant. In other words, institutional owners seem to derive a higher utility from share repurchases during the second tax period. The latter finding

corresponds to an increase in the after-tax value of share repurchases for institutional investors in 1999 (cf. Table 4-3).

As for individuals and families' ownership interacted with tax period 1, we find a positive coefficient for the decision between share repurchases and dividends that is greater in size but smaller in significance than the main effect from the ownership variable alone. The corresponding coefficient of 0.085 is significant at the 5% level. In tax period 2 (1999-2001), this coefficient looses its significance, however. Likewise, we find a strong and greatly negative effect for individuals and families' ownership when interacted with tax period 2 and concerning the decision between share repurchases and retention. However, this latter effect seems to be driven by a limited number of observations. In other words, individuals and families, while being positively associated with the decision towards share repurchases versus dividends during tax period 1 (1997-1998) exhibit a lower tendency towards this payout method during tax period 2 (1999-2001).

When considering pension fund ownership interacted with tax period 1 and tax period 2, we find a highly significant negative association with the decision to payout share repurchases versus no payout. The corresponding coefficients of -13.581 and of -12.922 are highly significant. Likewise, we find a negative relation between pension fund ownership in tax period 2 and the decision to pay dividends versus no payout. The coefficient of -0.18 is significant at the 10% level. This suggests that while pension fund originally, i.e. before 1997, were less associated only with share repurchases, they seemingly also developed a 'distaste' for dividends during tax period 2 (1999-2001). These findings are in line with our Conjecture 3 (C3) that the attractiveness of dividends to institutions decreased during 1999 until 2002, that the attractiveness of share repurchases to individuals was reduced during the same period of time, and that the attractiveness of dividends to pension funds was reduced in 1997 and that both payout methods were equally attractive to pension funds thereafter.

[Insert Table 4-10, about here]

Table 4-10 details the results for tax periods 2 and 3, therefore implicitly using tax period 1 (1997-1998) as base case. The regression yields a log-likelihood ratio of -1864.556 with an associated R2 of 0.612 for 4376 observations. Regarding the choice between share repurchases and i) retention as well as ii) dividends, we find coefficients of -4.304 and -4.273,

respectively. Both results are significant at the 1%-level, indicating that tax period 2 is negatively associated with the decision for share repurchases versus tax period 1. Our results for tax period 3 versus tax period 1 are similar: we find a negative relation between our dummy variable and the decision for share repurchases versus no payout and share repurchases versus dividend payout at the 10%-level of significance and at the 5%-level of significance, respectively. The corresponding coefficients are -1.268 and -0.877, respectively. Again, this is partly in line with our Conjecture 1 (C1) that the attractiveness of dividends versus share repurchases rose during Tax Period 2, however it is also in contrast with it, as we do not find dividends to develop into a less attractive payout method (when compared to share repurchases) during tax period 3 (2002-2007).

The results from our earlier regression on tax period 1 and tax period 2 considering our remuneration, sentiment and other determinants are upheld. The coefficients of our main ownership variables are also comparable. The tax-interacted ownership variables, however, provide additional insight: Interestingly, we find CEO ownership to be negatively associated with share repurchases (both versus retention and dividends) during tax period 2 versus tax period 1. The corresponding coefficients of -3.539 and -1.201 are significant at the 10% and the 5% level, respectively. In contrast, however, we find non-executive ownership to be positively associated with Tax Period 2 (1999-2001). The coefficients on individual and families ownership corroborate our previous results, i.e. we find a positive and significant (at the 10% level) coefficient of 0.075 concerning the decision between share repurchases and dividends during tax period 2 (1999-2001). In sum, these findings show mixed results with respect to our Conjecture 3 (**C3**) that the attractiveness of share repurchases to individuals was reduced during Tax Period 2 (1999-2001) and increased thereafter.

Compared to our earlier results, we find institutional ownership in tax period 3 (2002-2007) versus tax period 1 (1997-1998) to be positively associated with the decision for share repurchases versus retention and versus dividends. The corresponding coefficients of 0.061 and of 0.052, respectively, are significant at the 1% level. Likewise, we find institutional ownership to be negatively related to the decision for share repurchases versus dividends in tax period 2 (1999-2001), when compared to tax period 1 (1997-1998). These results are somewhat contrary to our Conjecture 3 (**C3**) that the attractiveness of dividends to institutions decreased during 1999 until 2002, but support the idea that the attractiveness of dividends

remains low, thereafter. When considering the interaction terms of our ownership variables and tax periods, we find a negative relation between pension fund ownership and both the decision to issue dividends (versus retention), to engage in share repurchases (versus retention), and to opt for share repurchases versus dividends. The corresponding coefficients are -0.18, -13.243, and -13.7, respectively. These results are significant at the 5% and 1% level. This supports our Conjecture 3 (**C3**) that the attractiveness of both payout methods is equally (un-)attractive to pension funds.

Overall, the inclusion of interaction effects contributes to our understanding of the effects taxation and ownership have on the payout decision. In particular, we find that institutional ownership seems to derive a higher utility from share repurchases during the second tax period, individual and families' ownership develop a greater taste for share repurchases during the first tax period, and pension funds avoid payout (and if necessary: share repurchases) during the second tax period.

4.5.1 Relative Attractiveness Measures

Do the relative differences in the taxation of dividends versus share repurchases drive the payout channel choice? To examine this question, we perform two types of regressions. First, we are interested in the main effects of our relative attractiveness measures. Second, we want to investigate the interaction effects of our relative attractiveness measures and the associated group's level of ownership. However, our relative attractiveness model does not take volumes into account (cf. Allen and Michaely, 2003). Table 4-11 reports the results: Our estimation yields a log-likelihood of -1800.406 with an R2 of 0.626 for 4379 observations. Interestingly, we find both the relative payout attractiveness of individuals and the relative payout attractiveness of pension funds to be negatively related to the decision to engage in share repurchases. When choosing between share repurchases and no payout, we find the coefficients for relative payout attractiveness (Individuals) to be -25.207 and for relative payout attractiveness (Pension funds) to be -166.540, respectively. Likewise, our regression results reveal for the choice between share repurchases and dividends that the coefficient for relative payout attractiveness (individuals) is -27.657 and for relative payout attractiveness (pension funds) to be -95.049. While this last coefficient is only significant at the 5%-level, all the other coefficients are significant at the 1%-level. In other words, the relative tax advantage

of dividends over share repurchases seems to reduce the utility for individuals and pension funds to choose for share repurchases. When considering the choice between dividends and retention, we find a negative coefficient of -66.658 for relative attractiveness (pension funds), i.e. the relative attractiveness measure of dividends versus share repurchases for pension funds indicates that avoiding payout (both dividends and share repurchases) might be a base strategy, but that in the case when one has to decide between a form of payout, dividends are preferred. This relates favorably to our results from the multinomial logit model. Contrary to this, we find the coefficients for corporations to be positively and highly significantly associated with both dividends and share repurchases in general. When choosing between dividends and no payout, our results reveal a coefficient of 55.507, significant at the 5%-level. For the choice between share repurchases and retention, we find a coefficient of 152.874 and when focusing on the choice between share repurchases and dividends our regressions yields a coefficient of 93.125. Both coefficients are statistically significant at the 1%-level. In other words, the relative tax advantage for share repurchases implies an increased utility of corporations for choosing against retention and dividends. These results are contradictory to our Conjecture 2 (**C2**) that individuals prefer share repurchases, while corporations and financial institutions (including pension funds) prefer dividends.

[Insert Table 4-11, about here]

Concerning our ownership variables, we find CEO ownership to be negatively related to the decision to payout dividends with a coefficient of -0.022. This finding is significant at the 5%-level. Individual and families' ownership is positively associated with dividends (-0.027) and negatively associated with the decision between share repurchases and retention with a coefficient of -0.054. These results are significant at the 10% and the 5%-level of significance, respectively. Likewise, we show that industrial ownership is negatively related with both the decision between dividends and retention (-0.026) and the decision between share repurchases and retention (-0.022). These later findings are significant at the 1%-level and the 5%-level, respectively, and indicate that industrial ownership is negatively related with the decision to payout. Overall, these findings compare favorably to our earlier results (cf. Table 4-7).

The results presented in the table also support our findings for our remuneration variables: we find executive stock options to be negatively related with the decision to payout dividends versus no payout with a coefficient of -0.024 and positively associated with the decision to engage in share repurchases versus dividends and an associated coefficient of 0.053. Both these results are statistically significant at the 1%-level.

Likewise, our findings for the sentiment variables are upheld: Trading volume over shares outstanding is negatively related to the decision to payout dividends with a coefficient of -0.165, which is significant at the 5%-level, but positively associated with the decision for share repurchases versus no payout (0.020) and dividends (0.266). The latter two results are significant at the 1%-level. Our other determinants are also fully in line with our earlier results (cf. Table 4-10).

All in all our mains regression on the effects of our relative attractiveness measures ties in with our earlier results. More interestingly, however is how these results change when we add in the interaction terms of our taxation variables and the appropriate relative attractiveness measures (see Appendix C).

First of all, we find that the coefficients for our relative payout attractiveness concerning dividend payout versus retention loose their statistical significance – though they still remain in line with our previous findings. Likewise, our earlier findings concerning the remaining decisions are supported: we find negative coefficients for relative payout attractiveness (individuals) and the decision to payout share repurchases versus retention (-24.976) and versus dividends (-27.472) – both results statistically significant at the 1%-level. We also identify negative coefficients for relative payout attractiveness (pension funds) and both decision of -151.941 and -94.355, respectively. Finally, our regression yields a coefficient of 140.269 for the first- and a coefficient of 92.386 for the second decision and relative payout attractiveness (corporations). Again, both results are highly statistically significant at the 1%-level and the 5%-level, respectively. Overall, the regression results for the interacted relative attractiveness measures are fully in line with the base case regression including our mains relative attractiveness measures.

Concerning the interaction effects, we discover an interesting effect: while executive ownership (excluding CEOs) is negatively associated with share repurchases in both decisions, the effect becomes positive when interacting with relative payout attractiveness (individuals).

This result is particularly significant for the decision between share repurchases and dividends: while executive ownership generally tries to avoid engaging in share repurchases, the relative attractiveness measure of dividends versus share repurchases for individuals suggests otherwise. Executive ownership – when adjusting for relative payout attractiveness (individuals), is positively associated with share repurchases versus dividends – a result that is statistically significant at the 1%-level. This partially supports our Conjecture 2 (**C2**) in that executives prefer share repurchases. The results for the remuneration, sentiment and other determinants are fully in line with our previous findings.

4.5.2 Dynamic Probit Model

We investigate whether taxation affects the switching decision between dividends and share repurchases. Different from our previous multivariate regression analysis, we employ a dynamic probit model on dividend payout. Therefore, we investigate the switching behavior between the two remaining payout channels taking the decision for or against dividends in the past into account. We assume no transaction cost for switching (cf. Allen and Michaely, 2003). Table 4-12 presents the results. Our regression analysis yields a log-likelihood of -519.529 for 3269 observations. Most importantly, we find tax period 2 (1999-2001) to be significantly and positively associated with the decision to issue dividends: When omitting tax period 1, we discover a coefficient of 0.795, which is significant at the 1%-level. Likewise, when omitting tax period 3, our results indicate a coefficient of 0.977 – again significant at the 1%-level. In other words, tax period 2 (1999-2001) is significantly and positively related with the decision to switch for dividends versus share repurchases. This is in line with our Conjecture 1 (**C1**) in that the attractiveness of dividends was reduced in 1997, increased in 1999, before it became again less attractive (when compared to share repurchases) in 2002.

[Insert Table 4-12, about here]

Notably, none of our remuneration and ownership variables seems to be significant for the switching decision.

In line with our previous findings, trading volume over shares outstanding is negatively related with the decision to issue dividends: we find a coefficient of -0.173 in both cases, i.e. when omitting tax period 1 or tax period 3. Again, these results are significant at the 1%-level.

Considering our other determinants, we find contrary to our expectations that being listed on the FTSE 100 is negatively related with the decision to switch to dividends. Our regression yields an estimate of -0.401, which is significant at the 5%-level. Likewise, we find our profit measure (RoA) and Free Cash Flow over assets to be negatively related to this decision, with coefficients of -2.154 and -1.436, respectively. These results suggest that more profitable firms usually pay repurchases on top of dividends. A possible explanation may be, that more profitable firms continue to pay a certain level of dividends, and simultaneously choose to distribute the excess profit via share repurchases. Leverage, however, is positively related with the decision to switch to dividends: we discover a coefficient of 0.529, which is only significant at the 10%-level.

Our dynamic probit model reveals that the decision to switch to dividends versus share repurchases is greatly affected by two other determinants: the lagged dividend choice and a constant. The coefficient of the lagged dividend choice variable is 1.519 and is statistically significant at the 1%-level. This suggests that state dependency is at play. In other words, firms that have decided to payout dividends in the past are highly likely to decide for paying out dividends in the present year. From the constant with a coefficient of 1.401, we infer that some part of this decision may be driven by unobserved characteristics. However, this latter finding is only significant at the 10%-level.

Overall, we conclude that the switching decision is heavily affected by two determinants: 1) the tax period in which a decision is made, and 2) whether the firm has chosen to issue dividends in the past. To a lesser degree the decision towards dividends is affected by leverage and unobserved characteristics. Performance measures, trading volume and FTSE 100 listings have a negative effect on the switching choice for dividends.

4.5.3 Aggregate Dividend Payout

In order to investigate how our tax-preference parameters affects aggregate dividend payout, we estimate: i) an aggregate time-series model, and b) an aggregate panel-data model on corporate payout. The basic model we employ has been used by Poterba (2004), but originally dates back to the seminal paper of Lintner (1953). However, as compared to Poterba's (2004) model, our approach mainly differs in two points: first, we estimate the model with three different tax preference parameters for individual investors, pension funds

and corporate investors, and second, we aggregate the data of our first model at the group of investor per firm-year, and for our second model, we aggregate at the group of investor by year. The results are presented in Table 4-13 and Table 4-14, respectively.

[Insert Tables 4-13 and 4-14, about here]

The resulting estimates of our first model are presented in Table 4-13): The R2 for this equation is about 0.05. The figures in parentheses show the associated standard deviation of the coefficients. In line with Poterba (2004), we find that short-run changes of our tax preference parameters have a rather small and insignificant impact on aggregate dividends. However, lagged dividend payout is again highly predictive but negatively related to aggregate dividend payout. The estimated coefficients imply a long-run dividend elasticity with respect to profits of $-0.014/-0.06157 \approx 0.23$, which is lower than the 0.75 reported by Poterba (2004). Likewise, we find long-run dividend elasticities with respect to our individual, pension fund, and corporation tax preference measures of 0.002/-0.06157 = -0.03, 0.09709/-0.06157 = -1.58, and 0.00257/-0.06157 = -0.042, respectively. Thus our tax preference parameters unanimously suggest that the relative tax burden on dividends and on capital gains negatively affect the share of earnings that is distributed as dividends. For comparison, Poterba (2004) reports a long-run elasticity of dividends with respect to his aggregate tax-preference parameter of 3.3, but mentions that this findings is somewhat surprising given the growth in share repurchases and the fact that it is substantially larger than previously reported results. This finding is contradictory to our Conjecture 4 (**C4**) that the relative tax burden of dividends and capital gain positively affects the level of dividend payout.

The resulting estimates of our second model are presented in Table 4-14: The R2 for this equation is about 0.28 for 86 observations. The increased R2 indicates that the aggregation per firm-year supports the fit of the model. Again, the figures in brackets present the standard errors of a coefficient. Also in this specification and in line with Poterba (2004), we find that short-run changes of our tax preference parameters generally have a rather small and insignificant impact on aggregate dividends with the exception of our profit measure and the current tax preference parameter for individuals. The associated coefficients indicate that there is a negative relation between current profits, the current tax preference parameter for individuals and aggregate dividend payout. The estimated coefficients imply a long-run

dividend elasticity with respect to profits of $-0.010375/-0.01167 \approx 0.89$, which is higher than the 0.75 reported by Poterba (2004). Likewise, we find long-run dividend elasticities with respect to our individual, pension fund, and corporation tax preference measures of 0.00876/-0.01167 = -0.75, -0.02096/-0.01167 = 1.80, and 0.08541/-0.01167 = -7.32, respectively. Thus our tax preference parameters for individuals and corporations suggest that the relative tax burden on dividends and on capital gains negatively affect the share of earnings that is distributed as dividends. However, the tax preference parameter for pension funds seems to have a positive effect on the share of earnings distributed as dividends. Thus, our findings show mixed results with respect to Conjecture 4 (C4), that the relative tax burden of dividends and capital gains is positively related to the level of dividend payout.

Overall, we conclude from our aggregate dividend payout model that the tax preference parameters suggests that the relative tax burden on dividends and on capital gains negatively affects the share of earnings that is distributed as dividends. In addition, short run changes of our tax preference parameters generally seem to have a limited effect on the aggregate dividend payout. Finally, lagged dividend payout and current profit are negatively related to the aggregate level of dividend payout.

4.5.4 Robustness Checks

Excluding Financial Firms in the Multinomial Logit Model

We reestimate the multinomial logit regressions on tax periods 1 and 2, as well as on tax periods 2 and 3, excluding all financial firms, and conclude that all results are upheld.

Estimating a Static Probit Model

In addition to the dynamic probit model, we estimate a static probit model with the same specification but excluding the lagged dependent variable. Our findings are largely in line with our previous results, but the dynamic probit model yields a higher log-likelihood.

4.6 Conclusion

The question as to whether taxes have an influence on the payout decision is a widely debated issue (Allen and Michaley, 2003; DeAngelo et al., 2008). Indeed, the treatment of

share repurchases and dividends is a complex issue. This paper documents major changes to the UK tax system and asks whether tax advantages drive dividend replacement in the UK. On the basis of income tax rates, corporation taxes, and various sources on the tax treatment of both dividends and share repurchases in the UK, we calculate after-tax values to individuals, pension funds, and corporations during different tax regimes:

Individual shareholders proofed to be the group of investors most affected by single changes during the period in consideration. However, they presumably exhibited a strong preference for off-market share repurchases throughout all tax regimes considered. Through tax year 1996/97, tax-exempt investors such as pension funds and charities preferred dividends to off-market share buybacks. During the years 1994-1996, off-market share repurchases seem to have formed a real alternative to shareholders that intended to sell their shares. This is in line with the findings of Rau and Vermaelen (2002), who argue that selling to the company in an off-market repurchase may have been significantly more profitable to these shareholders. Moreover, off-market repurchases enabled them to earn arbitrage profits by buying shares in the open market and tendering them to a company. Since 1997/98, pension funds should have been indifferent between both payout channels.

The situation for corporations appears to be the most consistent over time: due to the fact that corporations are tax-exempted on dividends, their valuation on this form of payout did not vary. Yet, share repurchases became more attractive in terms of after-tax value in the years after 1999 due to a reduction in the corporation tax rate on chargeable gains.

In addition, we dispose of information regarding the payout choices of listed UK firms during 1996-2007. We argue that the tax treatment of both payout methods has implications on the corporate payout decision by correcting for changes in cash flow, executive remuneration, sentiment and other determinants. Our multivariate analysis shows that institutional ownership seems to derive a higher utility from share repurchases during the second tax period (1999-2001), individual and families' ownership develop a greater taste for share repurchases during the second tax period, and pension funds seem to avoid payout in the second tax period (1999-2001). Overall, however, the effects of taxation on payout are limited – a finding that is in line with Allen and Michaely (2003) and DeAngelo et al. (2008).

When investigating the switching behavior with the help of a dynamic probit model, our results indicate that taxes indeed heavily affect the switching decision. In particular, we

discover that during the years 1999-2001 dividends seem to be the preferred choice. Moreover, we find a consistent negative effect of current and lagged dividend payout on the decision to switch to dividends.

Finally, we ask whether taxes have an effect on the aggregate level of dividend payout. From our aggregate dividend payout model, we infer that the tax preference parameters of individuals, pension funds, and corporations suggest that the relative tax burden on dividends and on capital gains negatively affect the share of earnings distributed. In other words, the relative tax burden of dividends and capital gains has indeed a negative effect on aggregate dividend payout.

Overall, we conclude that while taxes have at best a minor influence on the payout channel choice, they are an important determinant in a switching decision. Moreover, our results suggest that the relative tax burden on dividends and on capital gains has a negative effect on the level of dividends distributed in the long run. A better understanding of how taxes affect aggregated dividend payout may provide important insights to the dividend puzzle.

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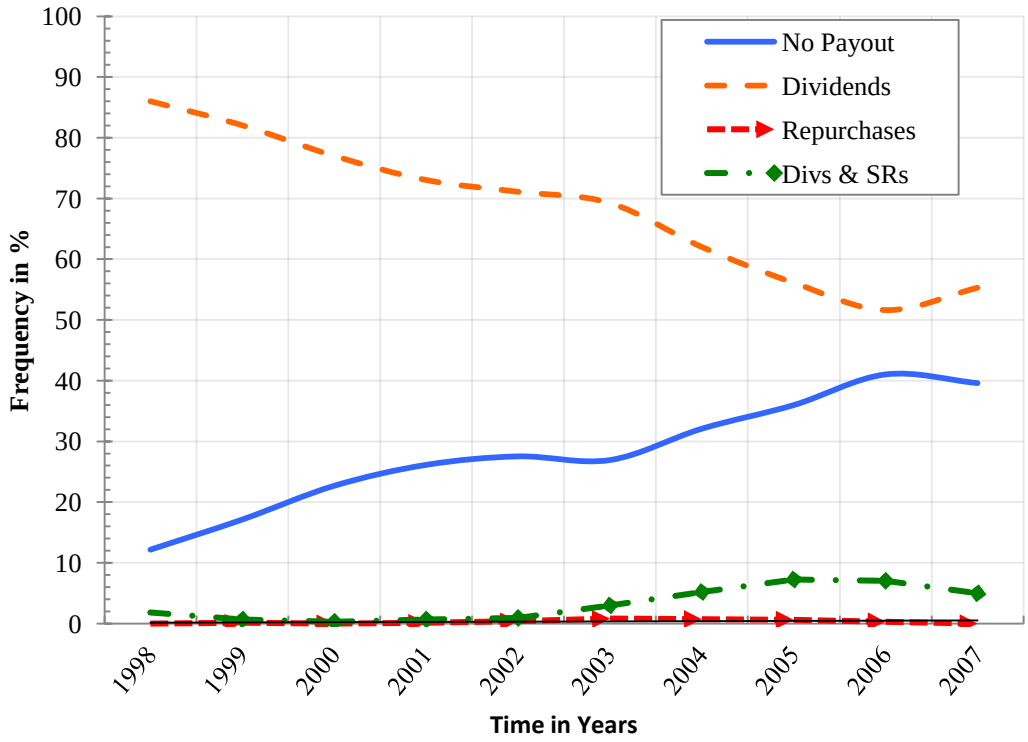
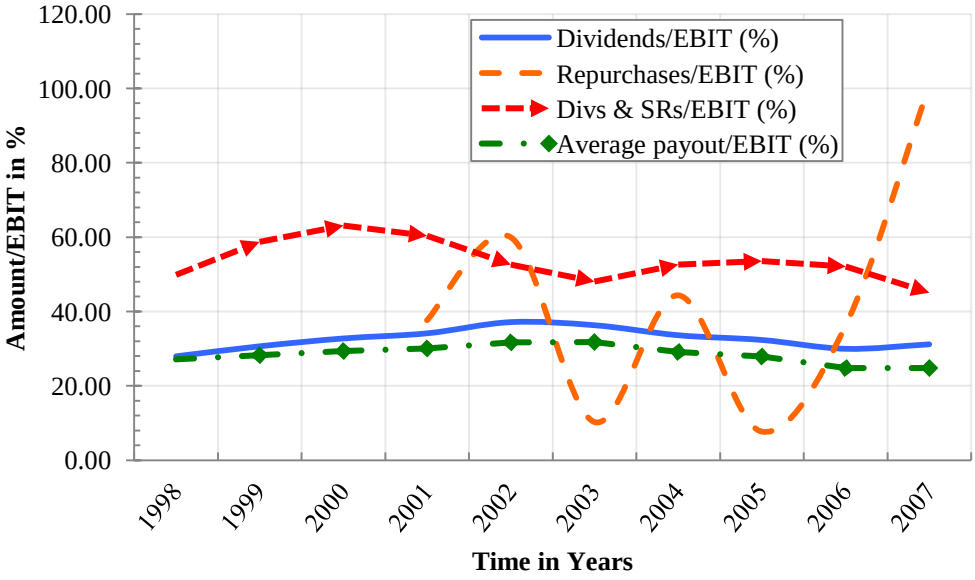
Figure 4-1 Payout Channels over Time.



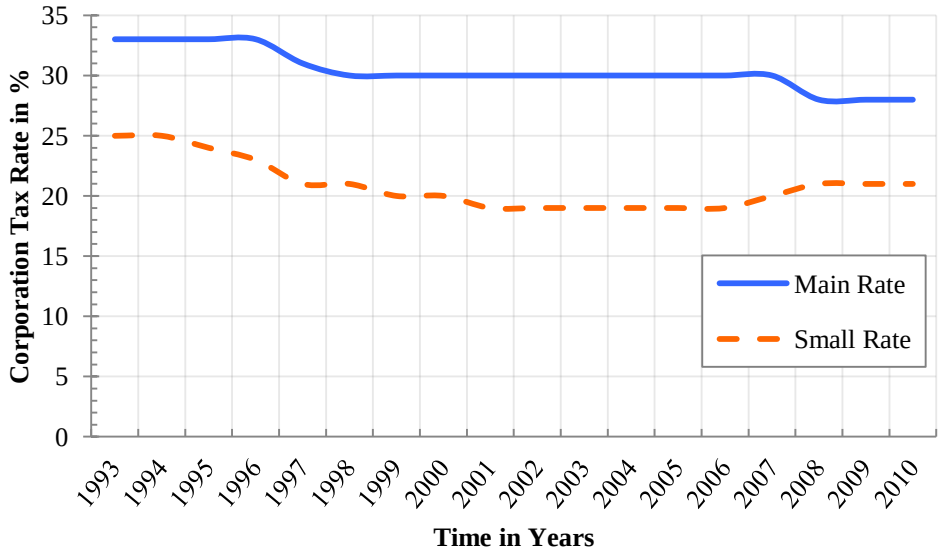
The figure presents the frequency of the use of specific payout channels (dividends, share repurchases, combined payout, i.e. both dividends and share repurchases, as well as the frequency that firms do not payout earnings. The data are extracted from Boardex, Manifest, and Zephyr.

Figure 4-2 Payout by Payout Channel.



The figure shows the amounts paid out divided by EBIT (provided that EBIT>0). The data are winsorized at 5%. The data are extracted from Boardex, Manifest, and Zephyr and based on own calculations.

Figure 4-3 The UK Corporation Tax from 1993-2010.



The figure shows the main rate of Corporation Tax and the Small Profits Rate over the years 1993-2010. The information has been collected from Devereux et al. (2004), and the websites of HM Revenues & Customs, and Scopulus.co.uk.

Table 4-1 The Frequency of Payout Channel Choice by Company Size.
This table documents the frequency of payout channel choice by index membership (based on firm-year observations for the period 1996-2007). The data are extracted from annual reports, Manifest and Zephyr.

Characteristic	Sample	FTSE100	FTSE250	FTSESmallCap	Fledgling
No Payout (%)	28.06	7.61	13.54	22.17	39.05
(Number of Observations)	(2,403)	(82)	(339)	(639)	(569)
Dividends (%)	68.31	79.04	81.78	76.20	60.12
(Number of Observations)	(5,850)	(852)	(2,047)	(2,196)	(876)
Share Repurchases (%)	0.32	0.00	0.40	0.28	0.27
(Number of Observations)	(27)	(-)	(10)	(8)	(4)
Dividends and Share Repurchases (%)	3.32	13.36	4.27	1.35	0.55
(Number of Observations)	(284)	(144)	(107)	(39)	(8)
Total (%)	100.00	100.00	100.00	100.00	100.00
(Number of Observations)	8,564	1,078	2,503	2,882	1,457

Table 4-2 Average Payout by Corporate Size.
This table documents the total amounts paid out (standardized over EBIT in percent) via a particular payout channel. The data are winsorized at the 5% level and are restricted to EBIT>0. It also presents the number of observations over the period 1996-2007. The data are presented by index membership (FTSE 100, FTSE 250, FTSE Small Cap, and Fledgling). The data are extracted from annual reports, Manifest, and Zephyr.

Characteristic	Sample	FTSE100	FTSE250	FTSESmallCap	Fledgling
No Payout /EBIT (%)	0.00	0.00	0.00	0.00	0.00
(Number of Observations)	(2,379)	(82)	(338)	(635)	(564)
Dividends/EBIT (%)	26.97	30.57	27.96	25.84	23.22
(Number of Observations)	(5,774)	(844)	(2,018)	(2,166)	(865)
Share Repurchases/EBIT (%)	16.55	0.00	0.15	14.15	22.22
(Number of Observations)	(23)	(0)	(7)	(6)	(4)
Divs & SRs/EBIT (%)	47.06	44.74	50.77	42.06	58.61
(Number of Observations)	(283)	(143)	(107)	(39)	(8)
Total Number of Observations	8,459	1,069	2,470	2,846	1,441

Table 4-3 After-Tax Value of Dividends and Share Repurchases.

Panel A. The After-Tax Value of a Dividend and Share Repurchase of 100 prior to September 21, 1994

	Higher rate individual	Lower and basic rate individual	Pension fund	Corporation
Dividends	77	100	125	100
Share Repurchases	93	109	123	84

The tax rates for individual investors were 40% (higher rate) and 20% (lower and basic rate). The category of pension funds includes insurance and investment companies in respect of their pension business. The ACT rate on the dividend was equal to 22.5 percent; the main rate of Corporation Tax was 33 percent. The table assumes that companies are paying Corporation Tax at the full rate.

Panel B. The After-Tax Value of a Dividend and Share Repurchase of 100 between September 21, 1994 and October 8, 1996

	Higher rate individual	Lower and basic rate individual	Pension fund	Corporation
Dividends	75	100	125	100
Share Repurchases	92	106	100	84

The tax rates for individual investors were 40% (higher rate) and 20% (lower and basic rate). The category of pension funds includes insurance and investment companies in respect of their pension business. The ACT rate on the dividend was equal to 20 percent; the main rate of Corporation Tax was 33 percent. The table assumes that companies are paying Corporation Tax at the full rate.

Panel C. The After-Tax Value of a Dividend and Share Repurchase of 100 between October 8, 1996 and July 1, 1997

	Higher rate individual	Lower and basic rate individual	Pension fund	Corporation
Dividends	75	100	125	100
Share Repurchases	92	106	100	84

The tax rates for individual investors were 40% (higher rate), 20% (lower rate), and 24% (basic rate). Dividends were chargeable at 20 percent for lower/basic rate taxpayers. The category of pension funds includes insurance and investment companies in respect of their pension business. The ACT rate on the dividends was equal to 20 percent; the main rate of Corporation Tax was 33 percent. The table assumes that companies are paying Corporation Tax at the full rate.

Panel D. The After-Tax Value of a Dividend and Share Repurchase of 100 between July 1, 1997 and April 6, 1999

	Higher rate individual	Lower and basic rate individual	Pension fund	Corporation
Dividends	75	100	100	100
Share Repurchases	92	106	100	84

The tax rates for individual investors were 40% (higher rate), 20% (lower rate), and 23% (basic rate). Dividends were chargeable at 20 percent for lower/basic rate taxpayers. The category of pension funds includes insurance and investment companies in respect of their pension business. The ACT rate on the dividends was equal to 20 percent; the main rate of Corporation Tax in '97/'98 was 31 percent. The table assumes that companies are paying Corporation Tax at the full rate.

Panel E. The After-Tax Value of a Dividend and Share Repurchase of 100 between April 6, 1999 and April 1, 2002

	Higher rate individual	Lower and basic rate individual	Pension fund	Corporation
Dividends	75	100	100	100
Share Repurchases	90	103	100	85

The tax rates for individual investors were 40% (higher rate), 23% (lower rate), and 10% (basic rate). Dividends were chargeable at 10 percent for lower/basic rate taxpayers and at 32.5 percent for higher rate taxpayers. ACT was abolished and the tax credit was cut to 10 percent. The main rate of Corporation Tax was 30 percent. The category of pension funds includes insurance and investment companies in respect of their pension business. The table assumes that companies are paying Corporation Tax at the full rate.

Panel F. The After-Tax Value of a Dividend and Share Repurchase of 100 after April 1, 2002

	Higher rate individual	Lower and basic rate individual	Pension fund	Corporation
Dividends	67	89	100	100
Share Repurchases	90	97	100	85

The tax rates for individual investors were 40% (higher rate), 10% (lower rate), and 22% (basic rate). Dividends were chargeable at 10 percent for lower/basic rate taxpayers and at 32.5 percent for higher rate taxpayers. The tax credit was equal to 10 percent. The main rate of Corporation Tax was 30 percent. The category of pension funds includes insurance and investment companies in respect of their pension business. The table assumes that companies are paying Corporation Tax at the full rate.

Table 4-4 Tax Rates on Dividends and Share Repurchases by Investor Category.
The table details the applicable tax rates on dividends and share repurchases (SR) to corporations. The Corporation Tax rates are collected from the website of HM Revenue & Customs. The data on Share Repurchases (SR) for Individuals shows the lower/basic/higher rate of income tax as collected from the Institute For Fiscal Studies and HM Revenue & Customs. The Capital Gains Tax (CGT) refers to the main corporation tax rate as collected from Devereux et al. (2004), and the websites of HM Revenue & Customs, and Scopulus.co.uk. ACT stands for Advance Corporation Tax. ACT was equal to 22.5 percent in tax year 1993-94. For individuals, there exists a personal exemption on capital gains by means of a tax credit. (*1) The basic rate of tax on dividend income is 20%. (*2) The basic rate of tax on dividends and savings income is 20%. (*3) The basic rate of tax on dividends is 10%, the basic rate of tax on savings income is 20%. (*4) The higher rate of tax on dividends is 32.5%. (*5) The basic rate of tax on dividends is 10%. From 2008-09 the starting rate is abolished for all non-savings income. (*6) For 2009-09, there is a 10% starting rate for savings with a limit of £2,320. For 2009-10 and 2010-11 there is a 10% starting rate for savings with a limit of £2,440. The Substantial Shareholdings Exemption exempts from the assessment of Capital Gains Tax since 2002. From 6 April 2010, individuals with an annual taxable income above £150,000 will be taxed on the distribution element at the dividend additional rate of 50%. The table gives the credit rate of 25% of net dividend (equal to 20% of gross dividend) for pension funds.

Regimes	Corporations				Individuals				Pension funds	
	Dividends	Share Repurchases			Dividends	Share Repurchases			Dividends	Share Repurchases
		starting rate	*small rate*	*main rate*		*lower*	*basic*	*higher*		
1993-1994	no ACT	–	25%	33%	tax credit: 20%	20%	25% (*1)	40%	credit: 25%	credit: 25%
1994-1996	no ACT	–	25%	33%	tax credit: 20%	20%	25% (*1)	40%	credit: 25%	agency buyback
1996-1997	no ACT	–	23%	33%	tax credit: 20%	20%	24% (*2)	40%	credit: 25%	no credit
After 1997	no ACT	–	21%	31%	tax credit: 20%	20%	23% (*2)	40%	no credit	no credit
After 1999	no ACT	–	20%	30%	credit: 10%	10%	23% (*3)	40% (*4)	no credit	no credit
After 2000	no ACT	10%	19%	30%	credit: 10%	10%	22% (*3)	40% (*4)	no credit	no credit
After 2003	no ACT	0%	19%	30%	credit: 10%	10%	22% (*3)	40% (*4)	no credit	no credit
After 2008	no ACT	–	21%	28%	credit: 10%	–	20% (*5)	40% (*4)	no credit	no credit
After 2010	no ACT	–	21%	28%	credit: 10%	–	20% (*5)	50% (*6)	no credit	no credit

Table 4-5 The Relative and Absolute Frequencies of Payout Channel Switches.
The table presents the absolute and relative frequencies of firms switching between the various payout methods from time t-1 to time t. The payout methods are: no payout, dividend payout, and share repurchases payout, including the combination of dividends and share repurchases. The data are extracted from Datastream, Manifest and Zephyr. The table is based on own calculations.

	Payout Channel at (t)			
Payout Channel at (t-1)	No Payout	Dividends	Share Repurchases	Total
No Payout	1,243	190	12	1,445
(%)	(86,02%)	(13.15%)	(0.83%)	(100.00%)
Dividends	133	3,959	133	4,225
(%)	(3,15%)	(93.70%)	(3.15%)	(100.00%)
Share Repurchases	10	87	113	210
(%)	(4,76%)	(41.43%)	(53.81%)	(100.00%)
Total	1,386	4,236	258	5,880
(%)	(23,57%)	(72.04%)	(4.39%)	(100.00%)

Table 4-6 Payout Tax Preference (Dividends versus Capital Gains)
The table shows the average share of equity owned, the ratio of after tax income from dividends over the after tax income from capital gains, and the equity-weighted average investor tax preference parameter following the approach by Poterba (2004). The tax preference parameter is shown for individual, pension funds, and for corporate investors. The data is extracted from Datastream, Manifest and is based on own calculations, using the following formula: $\boldsymbol{\theta_{h,t} = \left[\left(1 - \tau_{div,h,t}\right)/\left(1 - \tau_{cg,h,t}\right)\right]}$.

Year	Average share of equity owned by executive and non-executive directors, and individuals	Individual investor average ratio of after tax income from dividends over capital gains	Equity-weighted average individual investor tax preference parameter	Average share of equity owned by Pension funds	Pension fund average ratio of after tax income from dividends over capital gains	Equity-weighted average pension fund tax preference parameter	Average share of equity owned by Industrials, Institutions	Industrials, Institutions average ratio of after tax income from dividends over capital gains	Equity-weighted average corporate investor tax preference parameter
1997	10.0%	82.0%	9.0%	0.0%	125.0%	0.0%	23.0%	119.0%	28.0%
1998	8.0%	82.0%	8.0%	0.2%	100.0%	0.0%	30.0%	119.0%	35.0%
1999	8.0%	83.0%	8.0%	0.2%	100.0%	0.0%	27.0%	119.0%	32.0%
2000	11.0%	83.0%	12.0%	0.2%	100.0%	0.0%	29.0%	118.0%	34.0%
2001	11.0%	83.0%	12.0%	0.3%	100.0%	0.0%	27.0%	118.0%	31.0%
2002	11.0%	83.0%	12.0%	0.2%	100.0%	0.0%	27.0%	118.0%	32.0%
2003	10.0%	74.0%	10.0%	0.3%	100.0%	0.0%	29.0%	118.0%	34.0%
2004	9.0%	74.0%	9.0%	0.4%	100.0%	0.0%	25.0%	118.0%	29.0%
2005	9.0%	74.0%	9.0%	0.4%	100.0%	0.0%	25.0%	118.0%	30.0%
2006	10.0%	74.0%	10.0%	0.4%	100.0%	0.0%	28.0%	118.0%	33.0%
2007	9.0%	74.0%	9.0%	0.4%	100.0%	0.0%	30.0%	118.0%	36.0%

Table 4-7 Multinomial Logit on Earnings Payout and the Payout Channel Choice.
The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, ownership concentration, managerial remuneration, investor sentiment, and other control variables (such as corporate governance, size and performance measures). Definitions of the included variables are given in the appendix of the paper. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Tax Period 1 (1997-1998)	0.973**	0.010	0.261	0.651	-0.792*	0.090
Tax Period 2 (1999-2001)	0.3**	0.045	-2.377***	0.000	-2.709***	0.000
Ownership						
CEO ownership	-0.021**	0.030	-0.020	0.131	0.001	0.962
Non-executive ownership	0.000	0.995	0.000	0.989	0.001	0.965
Executive ownership (excl. CEO)	0.012	0.296	0.001	0.962	-0.010	0.707
Institutional ownership	-0.004	0.290	-0.009	0.220	-0.005	0.476
Individual & Families ownership	0.027*	0.053	-0.030	0.278	-0.054**	0.034
Industrial ownership	-0.026***	0.000	-0.02**	0.029	0.005	0.465
Pension fund ownership	0.000	0.996	0.035	0.590	0.032	0.584
Remuneration						
Salary/Assets	-0.066***	0.005	-0.224**	0.019	-0.159	0.140
Bonus/Assets	-0.031	0.395	-0.134	0.249	-0.142	0.267
Fees/Assets	-0.320	0.249	-14.840	0.557	-15.688	0.607
Option/Assets	-0.023***	0.010	0.001	0.678	0.052***	0.008
Restricted Stock/Assets	-0.01*	0.076	-0.034	0.202	-0.013	0.352
Miscellaneous/Assets	-0.132	0.448	-0.130	0.699	0.163	0.448
Other/Assets	-0.116*	0.064	-0.070	0.462	0.063	0.277
Sentiment						
Dividend Premium	-0.053	0.402	0.014	0.893	0.059	0.496
Trading Vol. /Sh. Out	-0.172**	0.011	0.02***	0.000	0.249***	0.003
Momentum (t-1)	0.325	0.811	1.109	0.654	1.071	0.635
Other Determinants						
FTSE100	1.125**	0.016	2.097***	0.000	1.035***	0.002
FTSE250	0.665***	0.002	0.451	0.128	-0.168	0.460
FTSE Small Cap	0.397**	0.018	-0.187	0.527	-0.572**	0.039
ROA	3.83***	0.000	9.133***	0.000	4.982***	0.000
Free Cash Flow/Assets (t-1)	8.27***	0.000	9.368***	0.000	2.525**	0.040
Market-to-book	0.006***	0.004	0.003	0.469	-0.003	0.353
Debt/Assets	0.572	0.323	-0.674	0.382	-1.339**	0.022
Var(CF)	0.057*	0.093	0.032	0.559	-0.032	0.451
Past Payout	0.012	0.713	0.005	0.874	-0.011	0.507
Boardsize	0.036	0.316	0.036	0.532	-0.002	0.965
Female (%)	0.550	0.625	0.604	0.692	0.090	0.941
CEO gender	0.177	0.716	-0.862	0.184	-1.059**	0.050
CEO age	0.034***	0.002	0.003	0.854	-0.031**	0.013
CEO tenure	0.043**	0.012	0.05**	0.043	0.012	0.501
Dividend Surprise (t-1)	-0.002	0.173	0.001	0.118	0.029	0.151
Log-Likelihood	-1877.729				-651.863	
R-squared	0.609				0.722	
Industry dummies	Yes				Yes	
Number of observations	4376				3386	

Table 4-8 Multinomial Logit on Dividends vs. Share Repurchases vs. No Payout.

The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, ownership, remuneration, sentiment and other determinants. The taxation variables include dummies for the periods 1999-2001 and 2002-2007. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Tax Period 2 (1999-2001)	-0.426	0.230	-3.139***	0.000	-2.682***	0.000
Tax Period 3 (2002-2007)	-0.723*	0.054	-0.833	0.101	-0.057	0.878
Ownership						
CEO ownership	-0.021**	0.031	-0.019	0.144	0.001	0.933
Non-executive ownership	0.000	0.975	0.001	0.949	0.001	0.938
Executive ownership (excl. CEO)	0.012	0.281	0.002	0.931	-0.010	0.712
Institutional ownership	-0.004	0.332	-0.009	0.241	-0.005	0.476
Individual & Families ownership	0.028**	0.050	-0.029	0.285	-0.054**	0.034
Industrial ownership	-0.025***	0.000	-0.021**	0.023	0.004	0.588
Pension fund ownership	-0.001	0.978	0.036	0.590	0.033	0.566
Remuneration						
Salary/Assets	-0.065***	0.006	-0.215**	0.023	-0.152	0.155
Bonus/Assets	-0.030	0.416	-0.130	0.265	-0.138	0.281
Fees/Assets	-0.309	0.262	-13.833	0.584	-14.616	0.633
Option/Assets	-0.023**	0.010	0.001	0.706	0.052***	0.006
Restricted Stock/Assets	-0.01*	0.077	-0.033	0.200	-0.013	0.348
Miscellaneous/Assets	-0.128	0.467	-0.123	0.715	0.164	0.440
Other/Assets	-0.117*	0.063	-0.065	0.456	0.066	0.226
Sentiment						
Dividend Premium	-0.062	0.308	0.091	0.384	0.148*	0.099
Trading Vol. /Sh. Out	-0.17**	0.011	0.019***	0.000	0.247***	0.003
Momentum (t-1)	0.402	0.768	0.771	0.761	0.648	0.780
Other Determinants						
FTSE100	1.114**	0.017	2.117***	0.000	1.059***	0.002
FTSE250	0.669***	0.002	0.474	0.107	-0.153	0.495
FTSE Small Cap	0.406**	0.016	-0.168	0.572	-0.566**	0.043
ROA	3.843***	0.000	8.906***	0.000	4.714***	0.000
Free Cash Flow/Assets (t-1)	8.28***	0.000	9.311***	0.000	2.428**	0.048
Market-to-book	0.006***	0.004	0.003	0.512	-0.003	0.285
Debt/Assets	0.600	0.302	-0.682	0.375	-1.38**	0.017
Var(CF)	0.053	0.112	0.032	0.540	-0.025	0.544
Past Payout	0.012	0.712	0.006	0.862	-0.010	0.528
Boardsize	0.041	0.245	0.040	0.482	-0.004	0.935
Female (%)	0.616	0.590	0.783	0.612	0.196	0.874
CEO gender	0.344	0.449	-0.737	0.237	-1.108**	0.043
CEO age	0.037***	0.001	0.006	0.715	-0.032**	0.013
CEO tenure	0.044**	0.011	0.049**	0.047	0.011	0.556
Dividend Surprise (t-1)	-0.002	0.144	0.001	0.140	0.027	0.213
Log-Likelihood	-1879.718				-653.534	
R-squared	0.609				0.722	
Industry dummies	Yes				Yes	
Number of observations	4376				3386	

Table 4-9 Multinomial Logit on Dividends vs. Share Repurchases vs. No Payout including Tax Effects. The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, remuneration, sentiment and other determinants. The taxation variables include dummies for the periods 1997/98 and 1999-2001. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Tax Period 1 (1997-1998)	0.865	0.161	0.237	0.754	-0.706	0.164
Tax Period 2 (1999-2001)	0.341	0.256	-3.143***	0.000	-3.538***	0.000
CEO ownership	-0.022**	0.029	-0.019	0.134	0.002	0.904
CEO ownership * Tax Period 1	-2.041	0.232	-3.265	0.102	-1.056	0.209
CEO ownership * Tax Period 2	0.015	0.725	-0.296	0.156	-0.317	0.117
Non-executive ownership	0.004	0.652	0.004	0.854	0.001	0.953
Non-executive ownership * Tax Period 1	0.027	0.899	0.623	0.143	0.633	0.136
Non-executive ownership * Tax Period 2	-0.019	0.320	-0.269	0.169	-0.232	0.199
Executive ownership (excl. CEO)	0.016	0.176	0.006	0.819	-0.008	0.764
Executive ownership * Tax Period 1 (excl. CEO)	2.013	0.228	1.720	0.309	-0.338	0.283
Executive ownership * Tax Period 2 (excl. CEO)	-0.013	0.665	-0.003	0.967	0.010	0.849
Institutional ownership	-0.006	0.170	-0.013*	0.096	-0.008	0.283
Institutional ownership * Tax Period 1	0.003	0.858	0.001	0.974	-0.003	0.867
Institutional ownership * Tax Period 2	0.010	0.299	0.063***	0.000	0.054***	0.000
Individual & Families ownership	0.029*	0.080*	-0.033	0.289	-0.059**	0.042
Individual & Families ownership * Tax Period 1	-0.031	0.502	0.055	0.337	0.085*	0.056
Individual & Families ownership * Tax Period 2	-0.002	0.935	-29982.736***	0.000	-30011.186	.
Industrial ownership	-0.025***	0.000	-0.019**	0.050	0.006	0.487
Industrial ownership * Tax Period 1	0.004	0.797	-0.004	0.860	-0.007	0.729
Industrial ownership * Tax Period 2	-0.010	0.410	-0.014	0.679	-0.001	0.969
Pension fund ownership	0.027	0.562	0.071	0.306	0.044	0.439
Pension fund ownership * Tax Period 1	-0.372	0.108	-13.851***	0.000	-10.620	.
Pension fund ownership * Tax Period 2	-0.18**	0.039	-12.922***	0.000	-14.017	.
Remuneration						
Salary/Assets	-0.071***	0.002	-0.228**	0.017	-0.164	0.124
Bonus/Assets	-0.030	0.417	-0.127	0.274	-0.135	0.288
Fees/Assets	-0.315	0.262	-16.506	0.527	-16.585	0.591
Option/Assets	-0.023**	0.015	0.001	0.617	0.054**	0.012
Restricted Stock/Assets	-0.01*	0.074	-0.033	0.187	-0.012	0.355
Miscellaneous/Assets	-0.132	0.446	-0.123	0.711	0.166	0.447
Other/Assets	-0.085	0.134	-0.025	0.852	0.123	0.456
Sentiment						
Dividend Premium	-0.051	0.421	0.012	0.907	0.055	0.532
Trading Vol. /Sh. Out	-0.173**	0.014	0.02***	0.000	0.261***	0.004
Momentum (t-1)	0.375	0.787	1.230	0.622	1.078	0.635
Other Determinants						
FTSE100	1.134**	0.015	2.126***	0.000	1.051***	0.002
FTSE250	0.668***	0.002	0.465	0.117	-0.156	0.495
FTSE Small Cap	0.387**	0.023	-0.199	0.502	-0.564**	0.042
ROA	3.82***	0.000	9.294***	0.000	5.11***	0.000
Free Cash Flow/Assets (t-1)	8.294***	0.000	9.349***	0.000	2.498**	0.046
Market-to-book	0.006***	0.004	0.003	0.516	-0.003	0.353
Debt/Assets	0.602	0.300	-0.652	0.403	-1.367**	0.022
Var(CF)	0.057*	0.096	0.032	0.552	-0.031	0.471
Past Payout	0.013	0.710	0.007	0.854	-0.011	0.503
Boardsize	0.036	0.318	0.034	0.557	-0.003	0.937
Female (%)	0.520	0.644	0.641	0.676	0.165	0.894
CEO gender	0.190	0.689	-0.859	0.187	-1.076*	0.051
CEO age	0.033***	0.003	0.003	0.830	-0.03*	0.018
CEO tenure	0.044**	0.011	0.05**	0.040	0.013	0.470
Dividend Surprise (t-1)	-0.002	0.207	0.002*	0.071	0.031	0.139
Log-Likelihood			-1865.104		-644.944	
R-squared			0.612		0.725	
Industry dummies			Yes		Yes	
Number of observations			4376		3386	

Table 4-10 Multinomial Logit on Dividends vs. Share Repurchases vs. No Payout including Tax Effects. The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, remuneration, sentiment and other determinants. The taxation variables include dummies for the periods 1999-2001 and 2002-2007. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Tax Period 2 (1999-2001)	-0.042	0.944	-4.304***	0.000	-4.273***	0.000
Tax Period 3 (2002-2007)	-0.364	0.547	-1.268*	0.080	-0.877**	0.043
CEO ownership	-0.022**	0.029	-0.019	0.146	0.002	0.877
CEO ownership * Tax Period 2	-2.330	0.187	-3.539*	0.069	-1.201**	0.046
CEO ownership * Tax Period 3	0.015	0.721	-0.291	0.169	-0.314	0.127
Non-executive ownership	0.004	0.641	0.005	0.800	0.002	0.902
Non-executive ownership * Tax Period 2	0.069	0.741	0.959**	0.027	0.95**	0.023
Non-executive ownership * Tax Period 3	-0.019	0.321	-0.270	0.169	-0.232	0.198
Executive ownership (excl. CEO)	0.016	0.176	0.007	0.782	-0.007	0.794
Executive ownership * Tax Period 2 (excl. CEO)	2.318	0.178	1.937	0.271	-0.363	0.295
Executive ownership * Tax Period 3 (excl. CEO)	-0.013	0.672	-0.005	0.944	0.009	0.866
Institutional ownership	-0.007	0.161	-0.011	0.168	-0.005	0.483
Institutional ownership * Tax Period 2	0.012	0.543	-0.040	0.241	-0.056*	0.065
Institutional ownership * Tax Period 3	0.010	0.287	0.061***	0.000	0.052***	0.000
Individual & Families ownership	0.029*	0.082	-0.031	0.310	-0.057**	0.045
Individual & Families ownership * Tax Period 2	-0.029	0.521	0.047	0.399	0.075*	0.092
Individual & Families ownership * Tax Period 3	-0.002	0.936	-31156.100	.	-30155.367	.
Industrial ownership	-0.025***	0.000	-0.019*	0.056	0.007	0.397
Industrial ownership * Tax Period 2	0.011	0.463	-0.018	0.410	-0.029	0.152
Industrial ownership * Tax Period 3	-0.009	0.428	-0.014	0.673	-0.002	0.953
Pension fund ownership	0.027	0.564	0.067	0.334	0.040	0.484
Pension fund ownership * Tax Period 2	-0.355	0.117	-14.209	.	-10.652	.
Pension fund ownership * Tax Period 3	-0.18**	0.039	-13.243***	0.000	-13.7***	0.000
Remuneration						
Salary/Assets	-0.07***	0.002	-0.216**	0.020	-0.152	0.143
Bonus/Assets	-0.030	0.426	-0.124	0.278	-0.135	0.281
Fees/Assets	-0.310	0.269	-17.479	0.519	-17.765	0.572
Option/Assets	-0.023**	0.015	0.001	0.645	0.054***	0.009
Restricted Stock/Assets	-0.01*	0.074	-0.032	0.186	-0.012	0.354
Miscellaneous/Assets	-0.129	0.459	-0.124	0.714	0.164	0.459
Other/Assets	-0.085	0.134	-0.016	0.899	0.131	0.421
Sentiment						
Dividend Premium	-0.058	0.340	0.084	0.423	0.135	0.135
Trading Vol. /Sh. Out	-0.176**	0.014	0.02***	0.000	0.268***	0.003
Momentum (t-1)	0.428	0.758	0.839	0.742	0.619	0.791
Other Determinants						
FTSE100	1.127**	0.016	2.149***	0.000	1.063***	0.002
FTSE250	0.672***	0.002	0.49*	0.097	-0.144	0.528
FTSE Small Cap	0.39**	0.022	-0.171	0.567	-0.55**	0.049
ROA	3.825***	0.000	9.207***	0.000	5.043***	0.000
Free Cash Flow/Assets (t-1)	8.31***	0.000	9.363***	0.000	2.457**	0.049
Market-to-book	0.006***	0.004	0.002	0.571	-0.004	0.295
Debt/Assets	0.625	0.284	-0.653	0.400	-1.4**	0.017
Var(CF)	0.055	0.103	0.027	0.601	-0.033	0.425
Past Payout	0.013	0.709	0.007	0.849	-0.011	0.502
Boardsize	0.039	0.271	0.042	0.473	0.001	0.982
Female (%)	0.549	0.629	0.873	0.571	0.355	0.776
CEO gender	0.273	0.549	-0.625	0.323	-0.927*	0.095
CEO age	0.035***	0.002	0.009	0.554	-0.025*	0.051
CEO tenure	0.044**	0.010	0.049**	0.047	0.011	0.547
Dividend Surprise (t-1)	-0.002	0.193	0.002*	0.080	0.029	0.172
Log-Likelihood	-1864.556				-644.194	
R-squared	0.612				0.726	
Industry dummies	Yes				Yes	
Number of observations	4376				3386	

Table 4-11 Multinomial Logit on Payout Channel Choice using Relative Payout Attractiveness.
The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, ownership, remuneration, sentiment and other determinants. The taxation variables are the relative attractiveness measures of dividends vs. share repurchases for individuals, pension funds and corporations and calculated as the after-tax value of dividends over the after-tax value of share repurchases. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Individuals' relative attractiveness (IRA)	2.408	0.110	-25.207***	0.000	-27.657***	0.000
Pension funds' relative attractiveness (PRA)	-66.658**	0.030	-166.54***	0.001	-95.049**	0.017
Corporations' relative attractiveness (CRA)	55.506**	0.033	152.874***	0.000	93.125***	0.007
Ownership						
CEO ownership	-0.022**	0.027	-0.022	0.102	-0.002	0.887
Non-executive ownership	0.000	0.969	0.006	0.751	0.008	0.535
Executive ownership (excl. CEO)	0.011	0.309	0.006	0.769	-0.005	0.855
Institutional ownership	-0.005	0.259	-0.008	0.277	-0.003	0.668
Individual & Families ownership	0.027*	0.055	-0.031	0.267	-0.056**	0.034
Industrial ownership	-0.026***	0.000	-0.022**	0.021	0.004	0.570
Pension fund ownership	0.002	0.966	0.019	0.768	0.011	0.849
Remuneration						
Salary/Assets	-0.068***	0.005	-0.154*	0.059	-0.081	0.370
Bonus/Assets	-0.032	0.378	-0.140	0.214	-0.173	0.176
Fees/Assets	-0.320	0.247	-25.816	0.399	-29.663	0.354
Option/Assets	-0.024***	0.009	0.001	0.705	0.053***	0.007
Restricted Stock/Assets	-0.01*	0.077	-0.037	0.192	-0.013	0.386
Miscellaneous/Assets	-0.135	0.436	-0.166	0.671	0.237	0.210
Other/Assets	-0.112*	0.071	-0.097	0.264	0.016	0.768
Sentiment						
Dividend Premium	-0.062	0.304	0.068	0.486	0.121	0.136
Trading Vol. /Sh. Out	-0.165**	0.016	0.02***	0.000	0.266***	0.001
Momentum (t-1)	0.522	0.700	-0.148	0.952	-0.624	0.779
Other Determinants						
FTSE100	1.112**	0.018	2.283***	0.000	1.169***	0.000
FTSE250	0.656***	0.002	0.706**	0.017	0.063	0.780
FTSE Small Cap	0.383**	0.023	0.097	0.741	-0.256	0.340
ROA	3.858***	0.000	9.13***	0.000	5.028***	0.000
Free Cash Flow/Assets (t-1)	8.273***	0.000	9.889***	0.000	3.277***	0.007
Market-to-book	0.006***	0.003	0.003	0.479	-0.003	0.301
Debt/Assets	0.562	0.332	-0.394	0.608	-1.063*	0.064
Var(CF)	0.06*	0.075	-0.022	0.654	-0.087**	0.040
Past Payout	0.012	0.708	0.003	0.939	-0.014	0.353
Boardsize	0.033	0.361	0.080	0.154	0.050	0.244
Female (%)	0.476	0.678	0.797	0.610	0.329	0.791
CEO gender	0.066	0.898	0.238	0.766	0.166	0.816
CEO age	0.031**	0.012	0.037**	0.043	0.010	0.529
CEO tenure	0.044***	0.010	0.044*	0.055	0.005	0.769
Dividend Surprise (t-1)	-0.002	0.139	0.001	0.255	0.026	0.164
Log-Likelihood	-1800.406				-624.4	
R-squared	0.626				0.733	
Industry dummies	Yes				Yes	
Number of observations	4379				3386	

Table 4-12 Dynamic Probit Model on Dividend Payout. The table presents a dynamic probit model on dividend payout versus share repurchase payout, with the latter including the combination of dividends and share repurchases on taxation, remuneration, ownership, sentiment, and other determinants. The data are extracted from Datastream, Manifest and Zephyr.

	Coefficient	p-value
Taxation		
Tax Period 1 (1997-1998)		
Tax Period 2 (1999-2001)	0.795***	2.956
Tax Period 3 (2002-2007)	-0.182	-0.778
Ownership		
CEO ownership	0.000	0.028
Non-executive ownership	-0.007	-1.202
Executive ownership (excl. (	0.006	0.746
Institutional ownership	-0.001	-0.307
Individual & Families owne	0.018	1.587
Institutional ownership	-0.001	-0.375
Pension fund ownership	0.014	0.428
Remuneration		
Salary/Assets	0.027	0.670
Bonus/Assets	0.039	0.680
Fees/Assets	8.503	0.461
Option/Assets	-0.017	-1.072
Restricted Stock/Assets	-0.002	-0.130
Miscellaneous/Assets	0.643	0.650
Other/Assets	0.063	0.611
Sentiment		
Dividend Premium	0.031	0.603
Trading Vol. /Sh. Out	-0.173***	-3.421
Momentum (t-1)	-1.235	-0.849
Other Determinants		
FTSE100	-0.401**	-2.271
FTSE250	0.063	0.461
FTSE Small Cap	0.130	0.932
ROA	-2.154***	-3.736
Free Cash Flow/Assets (t-1)	-1.436**	-2.075
Market-to-book	0.001	0.668
Debt/Assets	0.529*	1.959
Var(CF)	0.016	0.683
Past Payout	0.027	0.644
Boardsize	-0.027	-1.466
Female (%)	-0.082	-0.131
CEO gender	0.259	0.807
CEO age	-0.004	-0.581
CEO tenure	-0.003	-0.406
Dividend Surprise (t-1)	-0.014	-1.024
DIV (t-1)	1.519***	12.942
Constant	1.401*	1.892
Industry	Yes	
Log-likelihood	-519.529	
N	3269	

Table 4-13 Aggregate Dividend Payout Model: Time-Series Setup.
The table shows the result of an adjusted Lintner (1956) model on aggregate dividend payout, as presented by Poterba (2004), but simplified and using aggregated tax preference parameter for individual investors, pension funds and corporate investors, based on the after-tax values calculated for these different groups of investors in the various tax regimes considered. The table shows an aggregation at the level of all individuals, pension funds and corporation per year. The data are extracted from Datastream, Manifest and Zephyr.

Δln(Div_t)	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Δln(Profit_t)	0.00045	0.01591	0.03	0.977	-0.03077	0.03168
Δln(θ_Individual,t)	0.07452	0.08282	0.9	0.369	-0.08807	0.23710
Δln(θ_Pension fund,t)	0.02777	0.06559	0.42	0.672	-0.10098	0.15653
Δln(θ_Corporation,t)	0.23032	0.15816	1.46	0.146	-0.08014	0.54078
ln(Div_t-1)	-0.06157	0.00713	-8.64	0.000	-0.07556	-0.04759
ln(Profit_t-1)	0.01368	0.01398	0.98	0.328	-0.01378	0.04113
ln(θ_Individual,t-1)	-0.00202	0.11467	-0.02	0.986	-0.22712	0.22308
ln(θ_Pension fund,t-1)	0.09709	0.06390	1.52	0.129	-0.02834	0.22251
ln(θ_Corporation,t-1)	0.00257	0.19250	0.01	0.989	-0.37530	0.38044
Constant	0.62630	0.72988	0.86	0.391	-0.80645	2.05904
					F(9, 785) =	14.79
					R-squared =	0.0614
					# (Obs) =	3146

Table 4-14 Aggregate Dividend Payout Model: Panel Data.
The table shows the result of an adjusted Lintner (1956) model on aggregate dividend payout, as presented by Poterba (2004), but simplified and using aggregated tax preference parameter for individual investors, pension funds and corporate investors, based on the after-tax values calculated for these different groups of investors in the various tax regimes considered. The table shows an aggregation at the level of all individuals, pension funds and corporation per firm-year. The data are extracted from Datastream, Manifest and Zephyr.

Δln(Div_t)	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Δln(Profit_t)	-0.25133	0.06449	-3.9	0.000	-0.38093	-0.12173
Δln(θ_Individual,t)	-0.10549	0.04919	-2.14	0.037	-0.20434	-0.00663
Δln(θ_Pension fund,t)	-0.00682	0.09004	-0.08	0.940	-0.18776	0.17413
Δln(θ_Corporation,t)	0.11835	0.07592	1.56	0.125	-0.03422	0.27092
ln(Div_t-1)	-0.01167	0.01722	-0.68	0.501	-0.04626	0.02293
ln(Profit_t-1)	-0.10375	0.05923	-1.75	0.086	-0.22277	0.01527
ln(θ_Individual,t-1)	-0.00876	0.01642	-0.53	0.596	-0.04175	0.02423
ln(θ_Pension fund,t-1)	0.02096	0.09897	0.21	0.833	-0.17792	0.21984
ln(θ_Corporation,t-1)	-0.08541	0.05561	-1.54	0.131	-0.19717	0.02635
Constant	-0.08110	0.32908	-0.25	0.806	-0.74241	0.58021
					F(9, 49) =	2.35
					R-squared =	0.2813
					# (Obs) =	86

Variable	Description and source
Panel A: Payout and Taxation	
No Payout	The multivariate variable indicates no payout (Y=0). Source: *Manifest* and *Zephyr*.
Dividends	The multivariate variable indicates dividend payout (Y=1). Source: *Manifest*.
Share Repurchases	The multivariate variable indicates share repurchases (Y=2). Source: *Zephyr*.
Dividends and Share Repurchases	The multivariate variable indicates dividends and share repurchases (Y=3). Source: *Manifest* and *Zephyr*.
Dividends/EBIT	The value of dividend payout divided by EBIT. Source: *Datastream* and *Manifest*.
Share Repurchases/EBIT	The value of share repurchases divided by EBIT. Source: *Datastream* and *Zephyr*.
Divs & SRs/EBIT	The value of dividends and share repurchases divided by EBIT. Source: *Datastream*, *Manifest*, and *Zephyr*.
Tax Period 1 (1997-1998)	A dummy variable equal to one during the period from 1997-1998. Source: Own calculations.
Tax Period 2 (1999-2001)	A dummy variable equal to one during the period from 1999-2001. Source: Own calculations.
Tax Period 3 (2002-2007)	A dummy variable equal to one during the period from 2002-2007. Source: Own calculations.
Panel B: Ownership	
CEO Ownership	The percentage of stock outstanding held by the CEO. Source: *Manifest*.
Executive Ownership (excl. CEO)	The percentage of stock outstanding held by the executive directors (excluding CEOs). Source: *Manifest*.
Non-executive Ownership	The percentage of stock outstanding held by the non-executive directors. Source: *Manifest*.
Institutional Ownership	The percentage of stock outstanding held by financial institutions (banks, investment banks, investment trusts, insurance companies, mutual funds, venture capital). Source: *Manifest*.
Individual & Families Ownership	The percentage of stock outstanding held by individuals and families. Source: *Manifest*.
Industrial Ownership	The percentage of stock outstanding held by corporations. Source: *Manifest*.
Pension Fund Ownership	The percentage of stock outstanding held by pension funds. Source: *Manifest*.
Panel C: Remuneration	
Salary	Fixed remuneration paid to executive directors (including CEOs). Source: *Boardex* and *Manifest*.
Bonus	Remuneration based on past performance and paid out annually. Source: *Boardex* and *Manifest*.
Fee	Fixed remuneration predominantly paid to non-executive directors. Source: *Boardex* and *Manifest*.
Option	The Black-Scholes value of stock options awarded. Source: Own calculations based on *Boardex* and *Manifest*.
Restricted Stock	The value of restricted stock. Source: Own calculations based on *Boardex* and *Manifest*.

Miscellaneous	Sum of transaction bonus, deferred cash bonus, severance pay, recruitment bonus, and relocation bonus. Source. *Boardex* and *Manifest*.
Other	Sum of additional remuneration components, such as insurance payments. Source: *Boardex* and *Manifest*.
Salary/Assets	Fixed salary divided by total assets. Source: *Boardex*, *Datastream*, and *Manifest*.
Bonus/Assets	Bonus divided by total assets. Source: *Boardex*, *Datastream*, and *Manifest*.
Fee/Assets	Fee divided by assets. Source: *Boardex*, *Datastream*, and *Manifest*.
Option/Asset	The value of stock options awarded (BS-value) divided by total assets. Source: *Boardex*, *Datastream*, and *Manifest*.
Restricted Stock/Asset	The value of restricted shares divided by total assets. Source: *Boardex*, *Datastream*, and *Manifest*.
Miscellaneous/Assets	The total value of miscellaneous pay components divided by total assets. Source: *Boardex*, *Datastream*, and *Manifest*.
Other/Assets	The value of other pay components divided by total assets. Source: *Boardex*, *Datastream*, and *Manifest*.

Panel D: Sentiment

Dividend Premium	The logarithm of the average market-to-book ratio of dividend payers minus non-dividend payers. Source: Own calculations based on *Datastream* and *Manifest*.
Trading Vol./Sh. Out	Trading volume divided by shares outstanding. Source: Own calculations based on *Datastream*.
Momentum (t-1)	Lagged momentum variable, calculated as pseudo (i.e. calculated on nested sorts) Fama-French-Carhart factor. Source: *Style Research ltd.*

Panel E: Other Determinants

Assets (in £'000)	The book value of total assets. Source: Datastream.
EBIT (in £'000)	Earnings before Interest and Taxes. Source: *Datastream*.
FTSE100	A dummy variable equal to one if a company is a member of the FTSE 100 index. Source: *Manifest*.
FTSE250	A dummy variable equal to one if a company is a member of the FTSE 250 index. Source: *Manifest*.
FTSE Small Cap	A dummy variable equal to one if a company is a member of the FTSE Small Cap index. Source: *Manifest*.
ROA (in %)	Return on assets. Source: *Datastream*.
Free Cash Flow/Assets (t-1)	The lagged value of free cash flow divided by assets. Source: *Boardex* and *Manifest*.
Market-to-book	Market capitalization of equity divided by the book value of equity. Source: *Datastream*.
Debt/Assets	Total debt divided by common equity. Source: *Datastream*.
Var(CF)	The variance of cash flow per share. Source: *Datastream*.
Past Payout	The value of lagged total payout (i.e. the sum of dividends and share repurchases) divided by lagged EBIT. Source: *Manifest* and *Zephyr*.
Boardsize	The number of directors on the board. Source: *Boardex*, *Manifest*, and annual reports.

Female (%)	A binary variable which equals one in case of a female director and zero otherwise. Source: *Manifest*.
CEO gender	A dummy variable which is equal to one if the CEO is male, and equal to zero if female. Source: *Manifest*.
CEO age	The age of the CEO. Source: *Manifest*.
CEO tenure	The number of years the CEO serves in the current position. Source: *Manifest*.
Dividend Surprise (t-1)	Dividend Surprise measures the difference between the actual dividend paid and the estimated 12-month forward dividend lagged by one year. Source: Own calculations based on *Datastream*.

Appendices A-C: Taxation in Practice

Given that the tax regulation (and the evolution of the taxation principles over time) is complex, we present some numerical examples for the different types of investors by tax regime. For this purpose, we make several assumptions: a company has earnings after tax of £5 and 100 shares outstanding at a share price of £1. It considers paying out £5 either through a dividend of 5p per share or a share repurchase of 5 shares at the current market price of £1. Assume that the original issue price (the price at which an investor purchased in the past) of the share is 20p per share and that the original purchase price of the share plus an indexation allowance ('investor cost base') as well as the 'acquisition cost' of shares for corporations are equal to 50p. The marginal tax rate of the UK individual investor – the sole shareholder - is noted t and equal to 20% for an individual taxed at the starting rate of income tax, and equal to 40% for a high tax-bracket individual in 1993. In the same year, the main corporation tax rate is equal to 33%. Dividends are always expressed net of the basic rate of income tax. The 'gross equivalent' of a dividend (net dividend paid plus tax credit) is calculated following Bank et al. (2004) as:

$$(1 - t\_d\ )$$

, with t_d being the tax rate on distributed profits. It is important to note, that individuals may benefit from annual exemptions, while this is not the case for corporations. Moreover, the tax position for individuals and corporate shareholders may be different if the corporate shareholder is a dealer, or if the special treatment for the purchase of own shares by an unquoted company applies. We will, however, not consider these special cases in the examples worked-out below. We embark by describing the situation for individual investors by tax regime, before we turn to pension funds, and finally to corporations.

4.8 Appendix A: Taxation of Individuals

We assume that the individual investor owns the entire share capital. When calculating his overall taxable income, the individual has to include the total dividend paid by the corporation plus the associated Advanced Corporation Tax (ACT), and any tax credit that the corporation received on dividends (Gammie, 1998). In other words, the individual is liable to income tax on the gross dividend. If the shareholder pays tax at or below the basic rate (the basic income tax

limit is £23,700[117] for the 1993-94 tax year), double taxation is eliminated because the tax liability is reduced by the tax credit received. If the individual pays tax at the higher rate), he is liable to tax at the higher rate of 40% on (gross) dividend income, of which 22.5% of tax credit can be deducted. There is a personal income allowance, i.e. an amount that is not liable to income tax, of £3,445[118] in 1993-94. Capital gains are generally taxed at the top tax bracket of an individual's income with an annual exempt amount of £5,800 and a lower and basic rate of 20% (for the first £23,700) and a top rate of 40% in 1993-94.[119]

4.8.1 From 1993: ACT & tax credit: 22.5%, Income Tax: 20%/40%

Dividend payments:

If the company distributes a pre-corporation tax dividend of £5, it has to pay ACT levied at a rate of 22.5% on the distributed profits ('gross dividend'), i.e. £5 × 9/31 = £1.45.[120] The corporation offsets this ACT against its mainstream corporation tax obligation and gives a tax credit equal to this amount to the shareholder. The individual shareholder is liable to income tax on the amount of the gross dividend distributed of £6.45 (i.e. the aggregate of dividend and tax credit). Income tax is then calculated as: £6.45 × 20% = £1.29.[121] The resulting tax liability for the lower and basic rate individual is fully satisfied by the tax credit from the company, i.e. the after-tax value of a dividend is then equal to £5.16. The value of the dividend to the individual after personal taxes (t) can be summarized as: £5 - £6.45 × t + £1.45 = £6.45 - £1.29 = £5.16. For a higher rate individual who is liable to income tax at a rate of 40%, the after-tax value of a dividend is: £5 - £6.45 × t + £1.45 = £6.45 - £2.58=£3.87. The lower after-tax value is due to a higher tax obligation after deducting the (same) tax credit that exceeds the one of a lower and basic rate individual by £1.13, or 17.5% of the gross dividend.

Off-market repurchases:

The difference between the repurchase price, £1, and the original subscription price, 20p, is defined as the 'distribution element'. As in the case of dividends, the corporation has to pay

[117] If, after deducting the Personal Allowance (see below) from total income, the non-savings income does not exceed £23,700, the basic income tax rate applies.
[118] The amount of Personal Allowance may vary depending on age and marital status.
[119] Capital gains are taxed at the top income tax for lower and high tax-bracket individuals. Basic tax bracket individuals are liable to capital gains tax at 20 percent, while being liable to income tax at a rate of 25 percent.
[120] See: http://www.hmrc.gov.uk/manuals/ctmanual/CTM20510.htm.
[121] According to HMRC, the basic rate of tax on dividend income is 20% for the tax year 1993-94 (see Table 4).

ACT on the gross 'dividend' at a rate of 22.5%. Hence, in our example, the total distribution element is £(1 - 0.2) 5 = £4, and the corporation has to pay 9/31 × £4 = £1.16, which it can offset against mainstream corporation tax. The ACT can then be used as a tax credit: the selling investor who pays a tax of £5.16 × t, where t refers to the personal tax rate on the grossed-up 'dividend', can claim a tax credit of £1.16, so that the net tax paid on the distribution element is £5.16t - £1.16. The difference between the investor's cost base (50p) and the original issue price of the shares (20p) on his 10 shares is considered a capital loss of £5 (0.50 - 0.20) = £1.5, which is subject to ordinary income tax. A capital loss can only be offset against capital gains. Hence for individual investors, the value of a £5 repurchase is worth (in £): 5 – (5.16 × t – 1.16) + 1.5 × t = 6.16 – 3.66 × t. At a personal tax rate of 20%, this yields a value of £5.43. At a personal tax rate of 40%, this yields a dividend value of £4.67.

On-market repurchases:

When an investor sells his shares on-market, he does not know that he sells his share to the company and hence his profits are taxed as a capital gain and no tax credits can be claimed.[122] In this case, we cannot draw a general conclusion, as the attractiveness of the buyback program depends on the investor's capital gain tax liability. According to Rau and Vermaelen (2002), if the company repurchases 5/P shares at the market price P, and the investor had purchased the shares at an average price B, the total taxes (in £) owed after the repurchase are equal to [5 (P - B) / P] × t. There is generally no stamp duty on the purchase of the shares by an intermediary, by virtue of the intermediaries' exemption (subject to various conditions).[123] If the shares are held as capital assets[124] by the shareholder, the sale will constitute a disposal for the purposes of tax on capital gains, and a chargeable gain or an allowable loss may arise (subject to the anti-avoidance provisions of section 703 ICTA 1988).[125]

4.8.2 From 1994: ACT & tax credit: 20%, Income Tax: 20%/40%

Dividend payments:

[122]This may be different if the market maker does not act as an intermediary principal.
[123]The intermediaries' exemption is subject to further conditions as detailed in Section 88 A of the Finance Act 1986.
[124] Capital assets include common kinds of investment such as shares in a company or units in a unit trust.
[125] While all chargeables arise from capital gains, not all capital gains give rise to chargeable gains. The distinction between the two is the necessary presence of three factors for a chargeable gain, including a chargeable person, a chargeable disposal, and a chargeable asset (Pointon & Spratley, 1988).

If the company distributes a pre-corporation tax dividend of £5, it has to pay ACT levied at a rate of 20% on the distributed profits ('gross dividend'), i.e. £5 × 1/4 = £1.25 (i.e. 20% of £6.25).[126] The corporation offsets this ACT against its mainstream corporation tax obligation and gives a tax credit equal to this amount to the shareholder. The individual shareholder is liable to income tax on the amount of the gross dividend distributed of £6.25 (i.e. the aggregate of dividend and tax credit). Income tax is then calculated as: £6.25 × 20% = £1.25. The resulting tax liability for the lower and basic rate individual is satisfied by the tax credit from the company, i.e. the after-tax value of a dividend is then equal to £5. The value of the dividend to the individual after personal taxes (t) can be summarized as: £5 - £6.25 × t + £1.25 = £6.25 - £1.25 = £5. For a higher rate individual, which is liable to income tax at a rate of 40%, the after-tax value of a dividend is: £5 - £6.25 × t + £1.25 = £6.25 - £2.5 = £3.75. The lower after-tax value is due to a higher tax obligation after deducting the (same) tax credit that exceeds the one of a lower and basic rate individual by £1.25, or 20% of the gross dividend.

Off-market repurchases:

As in the case of dividends, the corporation has to pay ACT on the 'distribution element' at a rate of 20%. Hence, in our example, the total distribution element is £(1 - 0.2) 5 = £4, and the corporation has to pay 1/4 × £4 = £1 (i.e. 20% of £5), which it can offset against mainstream corporation tax. The ACT can then be used as a tax credit: the investor who pays a tax of £5 × t on the grossed-up 'dividend' (where t refers to the personal tax rate) can claim a tax credit of £1, so that the net tax paid on the distribution element is £5t - £1. The difference between the investor's cost base (50p) and the original issue price of the shares (20p) on his 5 shares is considered a capital loss of 5 × (£0.50 - £0.20) = £1.5, which is subject to ordinary income tax. Hence for lower and basic rate individuals, the value of a £5 repurchase is worth (in £): 5 – (5 × t – 1) + 1.5 × t = 6 – 3.5t, or at a personal tax rate of 20%: £5.3. At a personal tax rate of t = 40%, the value of the dividend would be equal to £4.6.

On-market repurchases:

The situation is similar to the one described above. Following Rau and Vermaelen (2002), the total taxes after the repurchase are equal to [5 (P - B) / P] t.

[126] See http://www.hmrc.gov.uk/manuals/ctmanual/CTM20510.htm.

4.8.3 From 1999: ACT is cancelled, tax credit: 10%, Income tax: 10%/32.5%

Dividend payments:

The individual shareholder is liable to income tax on the amount of the gross dividend distributed of £5 and the tax credit is calculated as 1/9 × £5 = 0.56. Income tax is then calculated as: £5.56 × 10% = £0.56. The resulting tax liability for the lower and basic rate individual is satisfied by the tax credit from the company, i.e. the after-tax value of a dividend is then equal to £5. The value of the dividend to the individual after personal taxes (t) can be summarized as: £5 - £5.56 × t + £0.56 = £5.56 - £0.56 = £5. For a higher rate individual who is liable to income tax at a rate of 32.5%, the after-tax value of a dividend is equal to: £5 - £5.56 × t + £0.56 = £5.56 - £1.81 = £3.75. The lower after-tax value is due to a higher tax obligation that exceeds the one of a lower and basic rate individual by £1.25, or 22.5% of the gross dividend.

Off-market repurchases:

In our example, the total distribution element is £(1 - 0.2) 5 = £4. The investor pays taxes of £4.44 × t on the grossed-up 'dividend' (where t refers to the personal tax rate) and can claim a tax credit of £0.44, so that the net tax paid on the distribution element is £4.44t - £0.44. The difference between the investor's cost base (50p) and the original issue price of the shares (20p) on his 10 shares is considered a capital loss of £5 (0.50 - 0.20) = £1.5, which is subject to the ordinary tax rate. Hence for individual investors, the value of a £5 repurchase is worth (in £): 5 – (4.44t – 0.44) + £1.5t = 5.44 – 2.94t, or at a personal tax rate of 10%: £5.15. At a personal tax rate of t=32.5%, the value of the dividend would be equal to £4.48.

On-market repurchases:

According to Rau and Vermaelen (2002), this can be calculated as: [5 (P - B) / P] t.[127]

4.9 Appendix B: Taxation of Pension funds

Dividend payments:

Prior to July 2, 1997, pension funds were entitled to a 20% tax credit on the tax-inclusive dividend, despite being exempted from income taxes on dividends and capital gains. Hence, a

[127]This may be different if the market maker does not act as an intermediary principal.

£5 dividend paid carried a tax credit of 1/4 × £5 = £1.25. Therefore, a dividend of £5 was worth £6.25 to a pension fund. After July 2, 1997, all tax credits for pension funds were eliminated. Hence, a £5 dividend was worth exactly 5 pounds.

Off-market repurchases:

Prior to September 1994, pension funds were entitled to a tax credit of 22.5% on the tax-inclusive distribution element of the repurchase. In our example, the distribution element was £(1 - 0.2) 5 = £4, yielding a tax credit to the shareholder of £4 × 9/31 = £1.16 in 1993.[128] Hence, for this investor, the £5 buyback was worth £6.16. After September 1994, the same buyback was worth £5 to this investor following the elimination of tax credits.[129]

On-market repurchases:

In on-market repurchases, no tax credit exists. Therefore, pension funds generally prefer off-market to on-market purchases.

4.10 Appendix C: Taxation of Corporate Shareholders

Dividend payments:

Corporate shareholders are not generally subject to corporation tax on income on a distribution from other UK-resident corporations.[130] Rather, these dividends form franked (i.e. taxed) investment income (FII). Accordingly, the after-tax value of a dividend of £5 to a corporate shareholder is equal to £5. A corporation itself, however, has to pay ACT on the dividends and can – in case it receives dividends from a strategic investment in another firm - deduct the to these dividends attached tax credit from its own obligation to pay ACT.

Off-market repurchases:

In general terms, section 208 ICTA states that the distributions of UK resident companies are not chargeable to corporation tax. More precisely, while according to section 209(2)(b) ICTA

[128] See http://www.hmrc.gov.uk/manuals/ctmanual/CTM20510.htm.

[129] While shareholders should generally have preferred dividends over share repurchases, Rau and Vermaelen (2002) argue that off-market repurchases may have been appealing to pension funds for two reasons: First, by not selling in the open market, pension funds could realize a tax credit, and second, they could buy shares in the open market and tender them to the company, thereby realizing arbitrage profits. While the Inland Revenue has introduced anti-avoidance rules to prevent this type of arbitrage, Rau and Vermaelen (2002) doubt that these rules were effective.

[130] Income and Corporation Taxes Act (ICTA), 1988, s. 208.

the purchase of own shares qualifies as a distribution to the extent that the amount paid out by the corporation exceeds the repayment of capital in respect of the shares considered, section 209(6) clarifies that this is not the case for transfers of assets between UK resident companies that are not under common control. Hence, prior to 1989, the Inland Revenue held the view that '...the distribution element was not to be included in the consideration for the disposal of the shares for the purposes of the charge to corporation tax on chargeable gains' for corporate investors, which receive a distribution by means of a share repurchase from a UK resident corporation (Birla, 2003: 1). Therefore, the distribution (or capital gain) would not be liable to corporation tax, and would constitute franked investment income.[131] With the publication of a new Statement of Practice in April 1989 applicable to share buy-backs, it was decided that the whole consideration received (including the distribution element) was to be taken into account for the calculation of corporation tax on chargeable gains.[132] Despite the oppositional decision of the High Court that overturned the Revenue Practice, the Court of Appeal later affirmed the views of the Inland Revenue (Birla, 2004). In short, according to the Statement of Practice 4/89, the distribution element of share repurchases gives rise to chargeable gains and is thus subject to capital gains tax at the Corporation Tax rate, despite a distribution by a UK company being exempted from corporation tax on income by virtue of section 208 ICTA 1988 (later replaced by section 1285(1) CTA 2009). Chargeable gains are treated as additional profits for the accounting period in question with the amount to be included being the total amount of chargeable gains less allowable losses (subject to certain conditions) without the consideration of an annual exempt amount.[133]

The Finance Act 2009 has introduced a new corporation tax regime for distributions paid to a UK company on or after 1 July 2009 and section 1285 CTA 2009 has been repealed, i.e. UK sourced distributions are not longer exempted from Corporation Tax on income. However, as by the new rule, distributions of a capital nature are not covered, the new corporation tax rules do not apply to the distribution element of a share buyback. Recently, the government stated that the coverage would be extended to include capital.[134] In short, this means that all UK

[131] After-tax income distributed from one UK-resident company to another.
[132] See Statement of Practice, 4/89. Note: Special rules apply for investment trusts and authorized unit trusts that are not considered here. See also Taxation of Chargeable Gains Act 1992, s. 1(2).
[133] Taxation of Chargeable Gains Act 1992, s. 8.
[134] Practical Law Company, Practice note: 'Share buybacks: tax.'

source distributions including capital would be liable to income corporation tax unless expressly stated otherwise, i.e. the distribution element would be franked investment income.

On-market repurchases:

The situation is similar to the one detailed above for individuals. Again, general conclusions are not possible, as the attractiveness of the buyback program depends on the shareholder's capital gain tax liability. If the company repurchases 5/P shares at the market price P, and the corporate shareholder purchased the shares at an average price B, the total taxes (in £) owed after the repurchase are equal to [5 (P - B) / P] t.

4.10.1 From 1993: Corporation Tax: 33%

Off-market repurchases:

In our example, the 5 shares were bought back at a purchase price of £1 per share, while the original subscription price was 20p per share and the total acquisition cost of shares were £2.5 (5 × 50p). Accordingly, the distribution element is £4 (5 (£1 - £0.2), and the capital element is £1.

A company engaging in a share repurchase has to pay ACT on this distribution element and can then transfer the associated tax credit to the corporate shareholder, which is, however, negligible.[135] In our example, the corporation has to pay 22.5% on the gross distribution element of £4, i.e. 9/31 £4 = £1.16 (which is equal to 22.5% of the gross figure: £4 + £1.16). Where a company received a 'dividend' from another UK company, the ACT payment was reduced accordingly: ACT paid = ACT fraction × (dividends paid - dividends received).[136]

Concerning the corporate shareholder, the Special Commissioners held that the distribution is to be included as consideration for the disposal of the share. The disposal gives rise to chargeable gains, which are subject to the corporation tax rate (Statement of Practice (SP) 4/89). According to SP 4/89, the corporation tax can be calculated as the buyback purchase price less the acquisition cost of shares. Hence, at the main corporation tax rate of 33%, the company has to pay corporation tax on chargeable gains of: (£5 - £2.5) 0.33 = £0.825.137

[135] The benefit being only of time value, as it solely affected the time pattern of the ACT set off (Devereux et al. 2004, Pointon, 7 May 2010).
[136] Income and Corporation Taxes Act 1988, s. 241.
[137] Pointon and Spratley (1988), p. 186.

Therefore, the after-tax value of an off-market share repurchase to a corporate shareholder was equal to: £5 - £0.825 = £4.18.

4.10.2 From 1994-1996: Corporation Tax: 33%

Off-market repurchases:

Similar to the calculation detailed above, the distribution element is £4 and the capital element is £1. Consequently, the corporation has to pay 20% of ACT on the gross capital gain of £4, i.e. 20/80 × £4 = £1 (equal to 20% on the gross amount £5 (£4 + £1). Where a company received a 'dividend' itself, the ACT payment was reduced accordingly: ACT paid = ACT fraction × (dividends paid - dividends received). At the applicable main corporation tax rate of 33%, the company has to pay corporation tax on chargeable gains of: (£5 - £2.5) 0.33 = £0.825.[138]

Therefore, the after-tax value of an off-market share repurchase to a corporate shareholder was equal to: £5 - £0.825= £4.18.

4.10.3 From 1996: Corporation Tax: 33%

Off-market repurchases:

Again, as detailed in the calculation above, the distribution element is £4 and the capital element is £1.The corporation has to pay 20% of ACT on the gross capital gain, i.e. 1/4 × £4 = £1, which is equal to 20% of the gross amount of £5(£4 + £1). At a current main corporation tax rate of 33%, the company has to pay corporation tax on chargeable gains of: (£5 - £2.5) 0.33 = £0.825.139 Therefore, the after-tax value of an off-market share repurchase to a corporate shareholder was equal to: £5 - £0.825 = £4.18.

4.10.4 From 1997: Corporation Tax: 31%

Off-market repurchases:

The situation is largely similar to the one presented above, i.e. the distribution element is £4 and the capital element is £1.The corporation has to pay 20% of ACT on the gross capital gain, i.e. 1/4 × £4 = £1. However, at a current main corporation tax rate of 31%, the company has to

[138] Pointon and Spratley (1988), p. 186.
[139] Pointon and Spratley (1988), p. 186.

pay corporation tax on chargeable gains of: (£5 - £2.5) 0.31 = £0.775.[140] Therefore, the after-tax value of an off-market share repurchase to a corporate shareholder was equal to: £5 - £0.775 = 4.22£.

4.10.5 From 1999: Corporation Tax: 30%

Off-market repurchases:

The situation is similar to the one presented above. However, at a current main corporation tax rate of 30%, the company has to pay corporation tax on chargeable gains of: (£5 - £2.5) 0.30 = £0.75.[141] Therefore, the after-tax value of an off-market share repurchase to a corporate shareholder was equal to: £5 - £0.75 = 4.25£.

4.10.6 From 2002: Corporation Tax: 30%

Off-market repurchases:

Again, the situation is similar to the one presented above. However, at a current main corporation tax rate of 30%, the company has to pay corporation tax on chargeable gains of: (£5 - £2.5) 0.30 = £0.75.[142] Therefore, the after-tax value of an off-market share repurchase to a corporate shareholder was equal to: £5 - £0.75 = 4.25£. However, the introduction of the substantial shareholding exemption in 2002 should have contributed positively towards this after-tax value, as it permits UK companies to dispose of 'substantial shareholdings' free of Corporation Tax or CGT. This regime was very important to trading groups, as it provided an exemption on disposal of subsidiaries in trading groups. It was also important for the UK as a jurisdiction for holding companies. Without this exemption, taxable gains on participations would be taxable, which would obviously not work for holding companies.[143]

[140] Pointon and Spratley (1988), p. 186.
[141] Pointon and Spratley (1988), p. 186.
[142] Pointon and Spratley (1988), p. 186.
[143] Interview with Barbara Delputte (Tax Lawyer at Travers Smith, London).

4.11 Appendix D: Multinomial Logit excluding Financial Firms

Table 4-15 Multinomial Logit on Dividends vs. Share Repurchases vs. No Payout excluding Financials.
The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, remuneration, sentiment and other determinants for non-financial firms, only. The taxation variables include dummies for the periods 1997/98 and 1999-2001. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Tax Period 1 (1997-1998)	0.911	0.160	0.325	0.691	-0.645	0.258
Tax Period 2 (1999-2001)	0.294	0.346	-3.459***	0.000	-3.768***	0.000
CEO ownership	-0.023**	0.039	-0.025*	0.098	-0.004	0.785
CEO ownership * Tax Period 1	-2.078	0.247	-3.083	0.117	-0.915	0.162
CEO ownership * Tax Period 2	-0.003	0.949	-0.233	0.135	-0.251	0.127
Non-executive ownership	0.006	0.572	0.000	0.997	-0.005	0.821
Non-executive ownership * Tax Period 1	0.026	0.901	0.618	0.150	0.623	0.158
Non-executive ownership * Tax Period 2	-0.009	0.713	-0.209*	0.097	-0.187	0.131
Executive ownership (excl. CEO)	0.018	0.139	-0.045	0.194	-0.069*	0.090
Executive ownership * Tax Period 1 (excl. CEO)	2.089	0.226	1.767	0.311	-0.369	0.305
Executive ownership * Tax Period 2 (excl. CEO)	0.002	0.942	0.081	0.145	0.087	0.115
Institutional ownership	-0.003	0.481	-0.009	0.315	-0.005	0.484
Institutional ownership * Tax Period 1	-0.001	0.961	-0.008	0.771	-0.008	0.710
Institutional ownership * Tax Period 2	0.004	0.703	0.049***	0.002	0.044***	0.001
Individual & Families ownership	0.029	0.103	-0.039	0.383	-0.063	0.154
Individual & Families ownership * Tax Period 1	-0.044	0.566	0.101	0.252	0.142**	0.037
Individual & Families ownership * Tax Period 2	-0.003	0.913	-30416.958	.	-29060.529***	0.000
Industrial ownership	-0.026***	0.000	-0.028**	0.022	-0.002	0.844
Industrial ownership * Tax Period 1	0.007	0.670	0.013	0.623	0.008	0.754
Industrial ownership * Tax Period 2	-0.005	0.716	0.020	0.478	0.027	0.318
Pension fund ownership	0.024	0.640	0.076	0.408	0.062	0.470
Pension fund ownership * Tax Period 1	-0.753***	0.009	-14.628	.	-10.099***	0.000
Pension fund ownership * Tax Period 2	-0.130	0.198	-13.619***	0.000	-12.805***	0.000
Remuneration						
Salary/Assets	-0.056**	0.014	-0.196**	0.045	-0.141	0.168
Bonus/Assets	-0.037	0.321	-0.066	0.539	-0.063	0.607
Fees/Assets	-0.199	0.512	-11.496	0.650	-11.142	0.719
Option/Assets	-0.023**	0.013	0.001	0.603	0.059***	0.002
Restricted Stock/Assets	-0.014**	0.040	-0.044	0.107	-0.028	0.271
Miscellaneous/Assets	-0.277	0.332	-0.683*	0.093	-0.297	0.495
Other/Assets	-0.093*	0.090	-0.037	0.791	0.126	0.455
Sentiment						
Dividend Premium	-0.049	0.471	0.074	0.533	0.123	0.242
Trading Vol. /Sh. Out	-0.184**	0.023	0.021***	0.000	0.271**	0.016
Momentum (t-1)	0.322	0.820	1.973	0.480	2.024	0.437
Other Determinants						
FTSE100	1.168**	0.015	1.884***	0.003	0.81**	0.037
FTSE250	0.73***	0.002	0.465	0.179	-0.197	0.477
FTSE Small Cap	0.433**	0.017	-0.430	0.219	-0.817**	0.011
ROA	3.497***	0.000	8.598***	0.000	4.994***	0.001
Free Cash Flow/Assets (t-1)	9.452***	0.000	11.924***	0.000	3.159**	0.030
Market-to-book	0.006***	0.005	0.004	0.322	-0.002	0.425
Debt/Assets	0.588	0.351	-1.181	0.214	-1.942**	0.015
Var(CF)	0.07*	0.060	0.040	0.522	-0.030	0.534
Past Payout	0.007	0.734	-0.003	0.909	-0.014	0.398
Boardsize	0.013	0.754	0.064	0.342	0.044	0.357
Female (%)	0.155	0.894	0.336	0.844	0.355	0.808
CEO gender	0.303	0.560	-1.033	0.171	-1.229*	0.074
CEO age	0.037***	0.002	-0.002	0.908	-0.039***	0.006
CEO tenure	0.039**	0.030	0.048*	0.073	0.016	0.422
Dividend Surprise (t-1)	-0.001	0.154	0.002	0.139	0.027	0.171
Log-Likelihood			-1594.742		-503.735	
R-squared			0.619		0.747	
Industry dummies			Yes		Yes	
Number of observations			3805		2871	

Table 4-16 Multinomial Logit on Dividends vs. Share Repurchases vs. No Payout excluding Financials. The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, remuneration, sentiment and other determinants for non-financial firms, only. The taxation variables include dummies for the periods 1999-2001 and 2001-2007. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Tax Period 2 (1999-2001)	-0.159	0.797	-4.808***	0.000	-4.616***	0.000
Tax Period 3 (2002-2007)	-0.438	0.490	-1.465*	0.063	-0.997*	0.055
CEO ownership	-0.023**	0.038	-0.024	0.109	-0.004	0.822
CEO ownership * Tax Period 2	-2.350	0.202	-3.508*	0.071	-1.174**	0.026
CEO ownership * Tax Period 3	-0.002	0.953	-0.230	0.137	-0.248	0.126
Non-executive ownership	0.006	0.557	0.002	0.954	-0.004	0.863
Non-executive ownership * Tax Period 2	0.051	0.817	0.943**	0.030	0.941**	0.028
Non-executive ownership * Tax Period 3	-0.009	0.713	-0.206	0.103	-0.184	0.135
Executive ownership (excl. CEO)	0.018	0.139	-0.042	0.217	-0.066*	0.098
Executive ownership * Tax Period 2 (excl. CEO)	2.391	0.173	2.014	0.261	-0.376	0.313
Executive ownership * Tax Period 3 (excl. CEO)	0.002	0.933	0.079	0.162	0.085	0.125
Institutional ownership	-0.004	0.471	-0.006	0.483	-0.002	0.771
Institutional ownership * Tax Period 2	0.007	0.723	-0.050	0.161	-0.06*	0.060
Institutional ownership * Tax Period 3	0.004	0.691	0.046***	0.003	0.041***	0.002
Individual & Families ownership	0.029	0.104	-0.037	0.409	-0.060	0.167
Individual & Families ownership * Tax Period 2	-0.045	0.529	0.086	0.302	0.127*	0.059
Individual & Families ownership * Tax Period 3	-0.003	0.912	-28403.166***	0.000	-30235.772	.
Industrial ownership	-0.026***	0.000	-0.026**	0.026	-0.001	0.956
Industrial ownership * Tax Period 2	0.013	0.399	-0.004	0.878	-0.016	0.521
Industrial ownership * Tax Period 3	-0.004	0.741	0.019	0.492	0.026	0.342
Pension fund ownership	0.024	0.642	0.070	0.453	0.054	0.527
Pension fund ownership * Tax Period 2	-0.71**	0.011	-13.989***	0.000	-10.416	.
Pension fund ownership * Tax Period 3	-0.130	0.201	-12.638***	0.000	-13.45***	0.000
Remuneration						
Salary/Assets	-0.056**	0.015	-0.184*	0.054	-0.130	0.190
Bonus/Assets	-0.037	0.332	-0.064	0.545	-0.067	0.582
Fees/Assets	-0.192	0.525	-12.825	0.636	-12.696	0.691
Option/Assets	-0.023**	0.013	0.001	0.637	0.059***	0.001
Restricted Stock/Assets	-0.015**	0.038	-0.043	0.105	-0.026	0.284
Miscellaneous/Assets	-0.275	0.341	-0.685*	0.093	-0.302	0.479
Other/Assets	-0.093*	0.089	-0.025	0.852	0.139	0.399
Sentiment						
Dividend Premium	-0.056	0.397	0.148	0.221	0.203*	0.061
Trading Vol. /Sh. Out	-0.187**	0.022	0.021***	0.000	0.279**	0.014
Momentum (t-1)	0.372	0.792	1.578	0.581	1.567	0.559
Other Determinants						
FTSE100	1.158**	0.016	1.915***	0.003	0.826**	0.033
FTSE250	0.735***	0.002	0.497	0.151	-0.184	0.508
FTSE Small Cap	0.438**	0.016	-0.409	0.242	-0.815**	0.011
ROA	3.504***	0.000	8.488***	0.000	4.914***	0.001
Free Cash Flow/Assets (t-1)	9.469***	0.000	11.948***	0.000	3.12**	0.032
Market-to-book	0.006***	0.005	0.003	0.371	-0.003	0.364
Debt/Assets	0.615	0.329	-1.223	0.189	-2.013***	0.009
Var(CF)	0.067*	0.064	0.029	0.628	-0.038	0.415
Past Payout	0.007	0.734	-0.003	0.919	-0.014	0.393
Boardsize	0.017	0.676	0.073	0.278	0.050	0.306
Female (%)	0.192	0.871	0.609	0.722	0.566	0.700
CEO gender	0.404	0.416	-0.750	0.310	-1.053	0.130
CEO age	0.039***	0.001	0.005	0.785	-0.034**	0.018
CEO tenure	0.04**	0.028	0.046*	0.080	0.014	0.479
Dividend Surprise (t-1)	-0.001	0.142	0.002	0.154	0.026	0.206
Log-Likelihood			-1594.088		-502.859	
R-squared			0.619		0.747	
Industry dummies			Yes		Yes	
Number of observations			3805		2871	

4.12 Appendix E: Interacted Relative Attractiveness

Table 4-17 Multinomial Logit on Payout Channel Choice using interacted Relative Attractiveness Measures.

The table presents a multinomial logit regression of the payout channel choice (no payout, dividends, share repurchases & dividends and share repurchases) on taxation, remuneration, sentiment and other determinants. The taxation variables are the relative attractiveness measures of dividends vs. share repurchases for individuals, pension funds and corporations and calculated as the after-tax value of dividends over the after-tax value of share repurchases. Moreover, the relative attractiveness measures are interacted with the ownership of multiple groups of owners. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest and Zephyr.

	Panel A: Base Outcome is no payout				**Panel B:** Base Outcome is dividends	
	Dividends		SR/Dividends + SR		SR/Dividends + SR	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Taxation						
Individuals' relative attractiveness (IRA)	2.483	0.159	-24.976***	0.000	-27.472***	0.000
Pension funds' relative attractiveness (PRA)	-55.894	0.224	-151.941**	0.013	-94.355**	0.033
Corporations' relative attractiveness (CRA)	46.299	0.234	140.269***	0.007	92.386**	0.015
CEO ownership	-0.122	0.371	1.327	0.270	1.577	0.220
CEO ownership * IRA	0.258	0.442	-2.351	0.152	-2.840	0.103
Non-executive ownership	0.020	0.886	0.233	0.470	0.147	0.630
Non-executive ownership * IRA	-0.027	0.884	-0.302	0.476	-0.186	0.648
Executive ownership (excl. CEO)	0.111	0.559	-0.4*	0.077	-0.552***	0.000
Executive ownership * IRA (excl. CEO)	-0.127	0.606	0.54*	0.055	0.722***	0.000
Institutional ownership	-0.311	0.808	-0.654	0.745	-0.088	0.960
Institutional ownership * CRA	0.260	0.811	0.549	0.748	0.072	0.961
Individual & Families ownership	0.087	0.623	-0.096	0.874	-0.119	0.854
Individual & Families ownership * IRA	-0.077	0.734	0.089	0.911	0.084	0.921
Industrial ownership	-0.267	0.827	-0.173	0.921	0.062	0.972
Industrial ownership * CRA	0.205	0.843	0.129	0.931	-0.049	0.974
Pension fund ownership	0.001	0.971	0.020	0.757	0.012	0.833
Pension fund ownership * PRA	-	-	-	-	-	-
Remuneration						
Salary/Assets	-0.068***	0.005	-0.152*	0.058	-0.080	0.375
Bonus/Assets	-0.031	0.392	-0.145	0.204	-0.183	0.159
Fees/Assets	-0.330	0.242	-26.217	0.392	-30.510	0.344
Option/Assets	-0.025***	0.008	0.001	0.695	0.055***	0.007
Restricted Stock/Assets	-0.01*	0.070	-0.037	0.190	-0.013	0.396
Miscellaneous/Assets	-0.138	0.428	-0.167	0.671	0.244	0.204
Other/Assets	-0.109*	0.073	-0.081	0.432	0.036	0.604
Sentiment						
Dividend Premium	-0.064	0.293	0.067	0.493	0.122	0.132
Trading Vol. /Sh. Out	-0.163**	0.016	0.02***	0.000	0.263***	0.001
Momentum (t-1)	0.540	0.690	-0.180	0.942	-0.648	0.772
Other Determinants						
FTSE100	1.109**	0.019	2.288***	0.000	1.177***	0.000
FTSE250	0.655***	0.002	0.715**	0.016	0.074	0.744
FTSE Small Cap	0.379**	0.025	0.092	0.754	-0.256	0.341
ROA	3.862***	0.000	9.172***	0.000	5.082***	0.000
Free Cash Flow/Assets (t-1)	8.264***	0.000	9.874***	0.000	3.293***	0.007
Market-to-book	0.006***	0.003	0.003	0.483	-0.003	0.294
Debt/Assets	0.565	0.330	-0.400	0.602	-1.083*	0.057
Var(CF)	0.061*	0.072	-0.023	0.636	-0.089**	0.042
Past Payout	0.012	0.704	0.003	0.936	-0.015	0.340
Boardsize	0.033	0.359	0.080	0.156	0.049	0.256
Female (%)	0.472	0.681	0.798	0.609	0.333	0.788
CEO gender	0.081	0.874	0.241	0.765	0.160	0.825
CEO age	0.031**	0.013	0.037**	0.043	0.010	0.524
CEO tenure	0.045***	0.010	0.046**	0.049	0.006	0.706
Dividend Surprise (t-1)	-0.002	0.138	0.001	0.255	0.027	0.151
Log-Likelihood			-1848.303		-622.026	
R-squared			0.616		0.735	
Industry dummies			Yes		Yes	
Number of observations			4376		3386	

4.13 Appendix F: Static Probit Model on Dividend Payout.

Table 4-18 Static Probit Model on Dividend Payout.

The table presents a static probit model on dividend payout versus share repurchase payout, with the latter including the combination of dividends and share repurchases on taxation, remuneration, ownership, sentiment, and other determinants. The data are extracted from Datastream, Manifest and Zephyr.

	Coefficient	p-value	Coefficient	p-value
Taxation				
Tax Period 1 (1997-1998)			0.111	0.376
Tax Period 2 (1999-2001)	1.209***	3.616	1.32***	6.430
Tax Period 3 (2002-2007)	-0.111	-0.376		
Remuneration				
Salary/Assets	0.014	0.336	0.014	0.336
Bonus/Assets	0.097	1.264	0.097	1.264
Fees/Assets	8.898	0.318	8.898	0.318
Option/Assets	-0.028*	-1.884	-0.028*	-1.884
Restricted Stock/Assets	0.002	0.145	0.002	0.145
Miscellaneous/Assets	-0.164	-1.604	-0.164	-1.604
Other/Assets	-0.003	-0.033	-0.003	-0.033
Ownership				
CEO ownership	-0.005	-0.479	-0.005	-0.479
Non-executive ownership	-0.007	-0.820	-0.007	-0.820
Executive ownership (excl. CEO)	0.004	0.346	0.004	0.346
Institutional ownership	-0.002	-0.489	-0.002	-0.489
Individual & Families ownership	0.033**	1.984	0.033**	1.984
Institutional ownership	-0.006	-1.134	-0.006	-1.134
Pension fund ownership	0.026	0.594	0.026	0.594
Sentiment				
Dividend Premium	-0.066	-1.103	-0.066	-1.103
Trading Vol. /Sh. Out	-0.274***	-4.396	-0.274***	-4.396
Momentum (t-1)	-0.520	-0.317	-0.520	-0.317
Other Determinants				
FTSE100	-0.574**	-2.493	-0.574**	-2.493
FTSE250	-0.007	-0.041	-0.007	-0.041
FTSE Small Cap	0.200	1.097	0.200	1.097
ROA	-3.18***	-4.231	-3.18***	-4.231
Free Cash Flow/Assets (t-1)	-1.618*	-1.943	-1.618*	-1.943
Market-to-book	0.001	0.544	0.001	0.544
Debt/Assets	0.596	1.645	0.596	1.645
Var(CF)	0.058*	1.688	0.058*	1.688
Past Payout	0.023	0.827	0.023	0.827
Boardsize	-0.043*	-1.648	-0.043*	-1.648
Female (%)	-1.392	-1.574	-1.392	-1.574
CEO gender	0.206	0.426	0.206	0.426
CEO age	-0.003	-0.292	-0.003	-0.292
CEO tenure	-0.004	-0.338	-0.004	-0.338
Dividend Surprise (t-1)	-0.008	-0.348	-0.008	-0.348
Constant	4.559***	4.075	4.448***	4.006
Industry	Yes		Yes	
Log-likelihood	-604.58		-604.58	
N	3386		3386	

4.14 Appendix G: Marginal Effects of the Multinomial Logit Model.

Table 4-19 Marginal Effects of the Multinomial Logit Model.

The table presents the marginal effects of the multinomial logit regression of the payout channel choice on taxation, ownership, remuneration, and other determinants. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest, and Zephyr. The marginal effects are calculated using the DMLOGIT2 Stata module as provided by Bill Sribney.

	Panel A: Base Outcome is no payout						**Panel B:** Base Outcome is dividends		
	Dividends			SR/Dividends + SR			SR/Dividends + SR		
	Coefficient	Std. Err.	p-value	Coefficient	Std. Err.	p-value	Coefficient	Std. Err.	p-value
Taxation									
Tax Period 1 (1997-1998)	0.07906	0.03389	0.02000	-0.00068	0.00129	0.59800	-0.00157	0.00186	0.39900
Tax Period 2 (1999-2001)	0.03167	0.01380	0.02200	-0.00693	0.00218	0.00100	-0.01001	0.00219	0.00000
Ownership									
CEO ownership	-0.00190	0.00091	0.03600	0.00000	0.00003	0.90100	-0.00001	0.00005	0.89700
Non-executive ownership	-0.00002	0.00085	0.98100	0.00001	0.00004	0.75600	0.00002	0.00005	0.73100
Executive ownership (excl. CEO)	0.00117	0.00106	0.27000	-0.00001	0.00006	0.85700	-0.00002	0.00010	0.83500
Institutional ownership	-0.00041	0.00038	0.28000	0.00000	0.00002	0.77900	0.00000	0.00003	0.87600
Individual & Families ownership	0.00250	0.00128	0.05000	-0.00014	0.00008	0.08100	-0.00020	0.00011	0.05700
Industrial ownership	-0.00233	0.00055	0.00000	0.00001	0.00002	0.60400	0.00003	0.00003	0.33200
Pension fund ownership	-0.00004	0.00364	0.99000	0.00007	0.00015	0.65300	0.00008	0.00021	0.71000
Remuneration									
Salary/Assets	-0.00587	0.00225	0.00900	-0.00029	0.00018	0.11600	-0.00033	0.00033	0.32300
Bonus/Assets	-0.00278	0.00332	0.40100	-0.00024	0.00029	0.41900	-0.00052	0.00048	0.28200
Fees/Assets	0.03802	0.06761	0.57400	-0.07402	0.06953	0.28700	-0.11934	0.10405	0.25100
Option/Assets	-0.00212	0.00085	0.01200	0.00006	0.00003	0.05400	0.00019	0.00008	0.01200
Restricted Stock/Assets	-0.00085	0.00051	0.09400	-0.00006	0.00006	0.37300	-0.00004	0.00005	0.45400
Miscellaneous/Assets	-0.01229	0.01525	0.42000	-0.00007	0.00069	0.92100	0.00070	0.00089	0.42800
Other/Assets	-0.01020	0.00555	0.06600	0.00004	0.00019	0.83700	0.00010	0.00022	0.65600
Sentiment									
Dividend Premium	-0.00777	0.00566	0.17000	0.00041	0.00026	0.11600	0.00059	0.00035	0.09300
Trading Vol. /Sh. Out	-0.01594	0.00677	0.01900	0.00047	0.00024	0.05300	0.00097	0.00039	0.01300
Momentum (t-1)	0.02230	0.12408	0.85700	0.00082	0.00593	0.89000	0.00185	0.00861	0.83000
Other Determinants									
FTSE100	0.09925	0.03950	0.01200	0.00321	0.00137	0.01900	0.00434	0.00152	0.00400
FTSE250	0.05891	0.01974	0.00300	0.00008	0.00056	0.88500	0.00006	0.00083	0.94300
FTSE Small Cap	0.03606	0.01485	0.01500	-0.00091	0.00076	0.23200	-0.00137	0.00108	0.20700
ROA	0.33019	0.08173	0.00000	0.01603	0.00475	0.00100	0.02057	0.00619	0.00100
Free Cash Flow/Assets (t-1)	0.73084	0.13358	0.00000	0.00597	0.00342	0.08100	0.01100	0.00500	0.02800
Market-to-book	0.00054	0.00019	0.00500	-0.00001	0.00001	0.48800	-0.00001	0.00001	0.35000
Debt/Assets	0.05253	0.05196	0.31200	-0.00237	0.00155	0.12500	-0.00387	0.00220	0.07900
Var(CF)	0.00444	0.00211	0.03500	-0.00012	0.00009	0.18300	-0.00020	0.00013	0.12000
Past Payout	0.00106	0.00274	0.69800	-0.00002	0.00004	0.59000	-0.00005	0.00006	0.38800
Boardsize	0.00295	0.00319	0.35500	0.00010	0.00012	0.42100	0.00013	0.00017	0.45100
Female (%)	0.03900	0.10223	0.70300	0.00242	0.00305	0.42800	0.00338	0.00450	0.45300
CEO gender	0.00442	0.04713	0.92500	0.00063	0.00177	0.72100	0.00111	0.00263	0.67400
CEO age	0.00281	0.00113	0.01300	0.00003	0.00004	0.51300	0.00004	0.00006	0.54100
CEO tenure	0.00383	0.00149	0.01000	0.00002	0.00004	0.70900	0.00002	0.00006	0.68900
Dividend Surprise (t-1)	-0.00018	0.00015	0.22500	0.00001	0.00000	0.11600	0.00011	0.00008	0.15800
Industry dummies			YES				YES		
Log-Likelihood			-1863.089				-639.380		
Pseudo R-squared			0.416				0.258		
Number of observations			4376				3386		

Table 4-20 Marginal Effects of the Multinomial Logit Model.

The table presents the marginal effects of the multinomial logit regression of the payout channel choice on taxation, ownership, remuneration, and other determinants. Panel A assumes no payout as base case. Panel B assumes dividend payout as base case. The data are extracted from Datastream, Manifest, and Zephyr. The marginal effects are calculated using the DMLOGIT2 Stata module as provided by Bill Sribney.

	Panel A: Base Outcome is no payout						**Panel B:** Base Outcome is dividends		
	Dividends			SR/Dividends + SR			SR/Dividends + SR		
	Coefficient	Std. Err.	p-value	Coefficient	Std. Err.	p-value	Coefficient	Std. Err.	p-value
Taxation									
Tax Period 2 (1999-2001)	-0.04656	0.03200	0.14600	-0.00725	0.00267	0.00700	-0.00927	0.00274	0.00100
Tax Period 3 (2002-2007)	-0.07925	0.03393	0.01900	0.00079	0.00149	0.59800	0.00172	0.00204	0.39900
Ownership									
CEO ownership	-0.00190	0.00091	0.03700	0.00000	0.00004	0.90000	-0.00001	0.00006	0.89700
Non-executive ownership	-0.00002	0.00085	0.98000	0.00001	0.00005	0.75600	0.00002	0.00005	0.73100
Executive ownership (excl. CEO)	0.00117	0.00107	0.27100	-0.00001	0.00007	0.85700	-0.00002	0.00010	0.83500
Institutional ownership	-0.00041	0.00038	0.28000	-0.00001	0.00002	0.77900	0.00000	0.00003	0.87600
Individual & Families ownership	0.00252	0.00128	0.04800	-0.00017	0.00009	0.08100	-0.00022	0.00012	0.05700
Industrial ownership	-0.00233	0.00055	0.00000	0.00001	0.00002	0.60400	0.00003	0.00003	0.33200
Pension fund ownership	-0.00005	0.00365	0.98800	0.00008	0.00017	0.65300	0.00009	0.00023	0.71000
Remuneration									
Salary/Assets	-0.00584	0.00226	0.01000	-0.00033	0.00021	0.11600	-0.00036	0.00037	0.32300
Bonus/Assets	-0.00275	0.00332	0.40800	-0.00027	0.00034	0.41900	-0.00057	0.00053	0.28200
Fees/Assets	0.04860	0.07698	0.52800	-0.08583	0.08064	0.28700	-0.13100	0.11423	0.25100
Option/Assets	-0.00214	0.00085	0.01200	0.00007	0.00003	0.05400	0.00021	0.00009	0.01200
Restricted Stock/Assets	-0.00084	0.00051	0.09800	-0.00006	0.00007	0.37300	-0.00004	0.00005	0.45400
Miscellaneous/Assets	-0.01230	0.01521	0.41900	-0.00008	0.00080	0.92100	0.00077	0.00097	0.42800
Other/Assets	-0.01022	0.00556	0.06600	0.00004	0.00022	0.83700	0.00011	0.00025	0.65600
Sentiment									
Dividend Premium	-0.00783	0.00567	0.16700	0.00048	0.00030	0.11600	0.00064	0.00038	0.09300
Trading Vol. /Sh. Out	-0.01603	0.00680	0.01800	0.00054	0.00028	0.05300	0.00107	0.00043	0.01300
Momentum (t-1)	0.02221	0.12429	0.85800	0.00095	0.00687	0.89000	0.00203	0.00945	0.83000
Other Determinants									
FTSE100	0.09891	0.03953	0.01200	0.00373	0.00159	0.01900	0.00477	0.00166	0.00400
FTSE250	0.05897	0.01974	0.00300	0.00010	0.00065	0.88500	0.00006	0.00091	0.94300
FTSE Small Cap	0.03623	0.01487	0.01500	-0.00106	0.00089	0.23200	-0.00150	0.00119	0.20700
ROA	0.32831	0.08183	0.00000	0.01859	0.00550	0.00100	0.02257	0.00679	0.00100
Free Cash Flow/Assets (t-1)	0.73088	0.13359	0.00000	0.00693	0.00397	0.08100	0.01207	0.00549	0.02800
Market-to-book	0.00054	0.00020	0.00500	-0.00001	0.00001	0.48800	-0.00001	0.00001	0.35000
Debt/Assets	0.05293	0.05201	0.30900	-0.00275	0.00179	0.12500	-0.00424	0.00241	0.07900
Var(CF)	0.00446	0.00211	0.03500	-0.00014	0.00010	0.18300	-0.00022	0.00014	0.12000
Past Payout	0.00107	0.00274	0.69700	-0.00002	0.00004	0.59000	-0.00006	0.00007	0.38800
Boardsize	0.00294	0.00319	0.35700	0.00012	0.00014	0.42100	0.00014	0.00018	0.45100
Female (%)	0.03870	0.10237	0.70500	0.00281	0.00354	0.42800	0.00371	0.00494	0.45300
CEO gender	0.00434	0.04721	0.92700	0.00073	0.00205	0.72100	0.00121	0.00288	0.67400
CEO age	0.00281	0.00114	0.01300	0.00003	0.00005	0.51300	0.00004	0.00006	0.54100
CEO tenure	0.00384	0.00149	0.01000	0.00002	0.00005	0.70900	0.00003	0.00007	0.68900
Dividend Surprise (t-1)	-0.00018	0.00015	0.22400	0.00001	0.00001	0.11600	0.00012	0.00009	0.15800
Industry dummies			YES				YES		
Log-Likelihood			-1863.089				-639.380		
Pseudo R-squared			0.416				0.258		
Number of observations			4376				3386		

Chapter 5

Are Female Top Managers Really Paid Less?

"*There is evidence that even when women do reach the highest levels of corporate management, they do not receive the same pay as men for the same job; a figure of 75% is often quoted. And rather than getting better over time, the position seems to be deteriorating.*" (Economist: "The glass ceiling", 24/08/2011)

"*…if male and female salaries continued to increase at current rates, it would be 2109 (…) before the average salary for female executives catches up with that of their male peers.*" (CMI, Mike Petrook, 31/08/2011)

5.1 Introduction

Female participation in the British labor market has been promoted for a long time and with a remarkable rate of success: according to OECD statistics, 70.5% of women aged 15-64 years participated in the civilian labor market (OECD Labour Force Statistics, 2010). Still, however, Eurostat reports an unadjusted gender pay gap in the UK of about 21% (Eurostat, 2009) – in other words, on average females continue to earn 21% less than males. And the relative differences in remuneration between male and females seems to be deteriorating: the gender gap index released by the World Economic Forum in 2010 shows that the United Kingdom is ranked as number 15 out of 134 countries – down from a 6th position in 2006.

A recent report issued by the Chartered Management Institute (CMI, 2011) states that gender wage equality for junior executives has been achieved, but given the existence of the gender wage gap and the low number of females at top corporate jobs, it poses the question whether corporations discriminate against women at the level of executive directors (CMI, 2011). Indeed, discriminating females in terms of remuneration may have far-reaching consequences, such as establishing financial dependency, and poverty at old age. In reverse, the participation of females may benefit the overall growth of the economy: the Women and Work Commission's (2006) final report estimated that increasing women's participation in the labor market would add £15-23 billion pound or 1.3-2.0 percent of GDP. Equal pay for equal work may remove a considerable part of the barriers that females face in the labor market.

The literature proposes a multitude of ideas on the gender wage gap: For example, Booth, Francesconi, and Frank (2003) advance the concept of 'sticky floors', according to which promotion rates for both women and men are equally fair, but also that women remain stuck at the lower end of the wages distribution due to the lack of convincing outside offers. In contrast, Arulampalam, Booth, and Bryan (2005) present evidence for a 'glass ceiling' effect, i.e. that the estimated gender wage gaps are larger at the top of the pay distribution. In a recent paper, Matsa and Miller (2011) suggest 'networking-effects' as possible cause, arguing that the percentage of female directors on the board is positively associated with the share of females in top management.

Another strand of the literature focuses on the link between pay and performance: Kulich, Trojanowski, Ryan, Haslam and Renneboog (2009) argue that the gender pay gap itself is driven by the fact that men have much stronger upward remuneration potential whereas women are offered contracts that are less performance sensitive. Other studies focus on the differences in the gender pay gap of different age groups, and suggest that improvements have been achieved reflecting the better education of women (Joshi, Makepeace, and Dolton, 2010).

While many ideas exist that aim to explain the gender pay gap of top executives, empirical proof for these theories is scarce, because the number of women who actually makes it to the top of companies is rather low. For this paper, we dispose of a particularly rich dataset covering both male and female top executives of virtually all companies listed in the UK from 1997-2007. This gives us the opportunity to examine in great detail the existence and possible causes of gender-based discrimination at the top-corporate level with respect to occupation and segregation, pay-for-performance sensitivity, behavioral biases, governance structure, and the impact of remuneration consultants.

Relying on our own data, we indeed observe a gap between the mean salary of male executive directors and that of female directors over the years 1996-2008 (see Figure 5-1**)**. Likewise, we find that the development of the average bonus awarded to male executives constantly surpasses that of female executives in the UK (see Figure 5-2). Moreover, we find the mean level of incentive compensation awarded to male executives to be higher on average, albeit at times the average incentive pay awarded to women exceeds that of male executives (See Figure 5-3).

[Insert Figures 5-1, 5-2 and 5-3 about here]

Can we conclude from these figures, that female executive directors are discriminated? Comparing the average salary of males and females does not do justice to the individual situation of these executives. Instead, we conclude that a much more detailed analysis is necessary that takes into account important other differences, such as the position of the executive, her age and tenure in the job, as well as the size and industry of the company in consideration.

Consequently, the set-up of our papers differs from the existing literature in the following aspects: First, we can draw on long-term remuneration information of executive directors covering many years of data. We also harmonize our data in order to remove the effect of inflation that may have added substantially to the pay differences in existing studies. Secondly, we look at many different compensation components, including base pay, bonus, incentive pay, and total pay. Thirdly, we examine the differences with regard to executive directors (excluding CEOs) and CEOs.[144] Moreover, we dispose of information on the different positions the top managers in our data assume, which allows us to investigate pay differences related to these occupational differences at the corporate top level. Lastly, we chose to employ a treatment effect estimation on our remuneration measures, which offers the possibility to account for most of the unobserved heterogeneity from which many previous studies seem to suffer.

Using a treatment effect estimation, we find a substantial discrimination of female executives (excluding top managers) in various components of pay, including base salary, bonus, incentive compensation, and hence also in the total level of compensation. With the help of Tobit regressions, we identify differences between female and male managers and between executives and top managers concerning compensation composition, pay-for-performance sensitivity, internal governance, and the effect of the Top 4 remuneration consultants. In addition, our results suggest that introducing a minimum quota of female non-executive directors on the board may help to reduce gender-based discrimination.

The paper is organized as follows: the next section reviews earlier studies and empirical evidence on the determinants of the gender wage gap. Section 3 raises the hypotheses that we aim to answer in this paper. Our different methods of analysis are laid out in section 4. The

[144] In the absence of a CEO, we also take executive chairmen or managing directors into account.

results of our analysis are presented in section 5. In section 6 we discuss our findings and conclude.

5.2 Earlier Studies and Empirical Evidence

As mentioned above, the literature on gender-based discrimination is very diverse and covers a multitude of views, the most well known refer to the 'glass ceiling' and the 'sticky floors' ideas. A separate strand of the literature focuses on occupational and industrial segregation. Another important area covers the link between corporate performance, tournaments and the so-called 'glass cliff'. We also present a subsection on certain behavioral biases such as the 'romance of leadership' and stereotypes. Lastly, we give a brief summary of the most important studies and results concerning the impact of pay consultants on the gender wage gap.

5.2.1 Glass Ceilings and Sticky Floors

A number of studies establishes the link between promotion rates and the statistically observed gender pay gap. Lazear and Rosen (1990) published a seminal paper in which they argue that the distribution of labor market ability is the same for both males and females. The backbone of their argument is that promotion rates are equal for both men and women, but that the applicable promotion standards for females are higher due to their supposedly higher opportunity cost (Lazear and Rosen, 1990) – a claim that was later supported by Jones and Makepeace (1996). Hence, fewer females would be promoted to the level of executive officer. Consequently, they explain the differences in average pay between male and females with the lower number of females in better-paid jobs, and thus provide the theory behind the 'glass-ceiling'-concept.

Booth et al. (2003) develop the model of Lazear and Rosen (1990) further, by arguing that while the promotion rates are the same for both men and women, the 'return-to-promotion' is higher for men. The idea behind this argument is that men's salaries are more frequently raised, due to a higher number of outside offers, and the greater likelihood of firms to consider such offers as credible. Accordingly, women do not receive pay rises, which is the fundamental idea behind the 'sticky-floors'-concept. In addition, Booth et al. (2003) argue that women are more likely to quit and drop out of the workforce, mainly because they dispose of higher non-

market opportunities than men – an idea that is in line with Lazear and Rosen's (1990) argument of higher opportunity cost on the part of females.

In contrast, many of the more recent papers argue that promotion rates of male and female executives are not equal (Smith, Smith, and Verner, 2011, Matsa and Miller, 2011). For instance, Smith et al. (2011) attribute the lower number of females in CEO or Vice President positions to a gender gap in the respective hiring probabilities. Remarkably, the authors advance the idea that the hiring probabilities of women increase with a higher number of females on the board. Their findings also somewhat surprisingly suggest that a female chairman of the board has a negative effect on the promotion chances of female managers to the CEO position.

In a comparable study, Matsa and Miller (2011) examine the gender gap in the promotion rates of CEOs at S&P companies from 1997 to 2009 and present empirical evidence supporting the view that there is a significant and positive relation between the number of females on the board and the number of females in top management.

Another string of research is concerned with the development of the gender wage gap over time. Blau and Kahn (1994), for instance, investigate wage trends of male and females in the US over the years 1975-1987 and conclude that the average gender wage gap was reduced also due to a higher return-to-experience for women. The authors observe that the experience of women rises over time, which is consequently reflected in a higher pay. Notably, they propose the idea of a 'gender twist', i.e. that certain changes in labor demand affected both gender differently. According to their findings, women were favored at lower levels of ability, while men were preferred with high levels of ability. In sum, Blau and Kahn (1994) suggest that the gender pay gap narrows more quickly at the bottom than at the top.

In a similar way, Joshi et al. (2010) show that the gender pay gap in the UK also varies across different age groups and workers: they find, for example, that over the years 1978-2000, the gender gap narrowed for full time workers in their early thirties, but widened for the 33-42 years old. The authors relate theses changes to improvements in the education of women, the increased experience of women, and differences in qualifications. This is in line with the findings presented by Arulampalam et al. (2005), who present evidence that the gender wage gap sometimes widened at the top and in other cases at the bottom, thus pointing to both the 'glass ceiling'- and the 'sticky floors' idea, respectively. Arulampalam et al. (2005) argue that

this may be due to differences in childcare and provisions, as well as in wage setting institutions. In addition, the authors estimate the wage gap to be in the range of 20-29 percent, while accounting for (among others) age, tenure, education, sector, and year.

In sum, the literature has identified many variables that relate to both executive pay and the gender differences in pay, including the percentage of women on the board, the level of education, experience, age, sector, and year.

5.2.2 Occupational and Industrial Segregation

A considerable part of the research on the gender wage gap establishes the link between pay differences and occupational and industrial segregation. As for occupational segregation, Jones and Makepeace (1996) build on the ideas of both Lazear and Rosen (1990) and Blau and Kahn (1994) that career success is related to work experience, and argue that there are little differences in pay between men and women within the same rank, but considerable differences stemming from the different allocation of men and women across ranks. In other words, they question whether the allocation of men and women across ranks is fair. However, Kidd and Goninon (2000) find evidence that both males and females earn less for the same work in female-dominated jobs than their counterparts in male-dominated jobs. Bertrand and Hallock (2001) follow up on this argument, and attribute about 80% of the observed differences in the remuneration of females to occupational segregation, but also to company size, age, and tenure. Interestingly, they do not find any support for the idea that gender-based differences in pay may be driven by industrial segregation.

In contrast, Allen and Sander (2002) discuss the idea of 'comparable worth' and argue that work predominantly done by women is valued less in society and consequently rewarded less than the same work done by men. They claim that the more women work in a certain industry, the lower the remuneration in that industry becomes. The authors are able to provide empirical proof for this theory, while controlling for education, experience, the existence of less-unionized female industries, and attitude. Allen and Sander (2002) arguably explain the willingness of women to accept work under these conditions with them being less focused on making career. Alkadry and Tower (2007: 889) summarize that "gender typing and socialization tend to result in the segregation of women in certain agencies, occupations, and positions."

Overall, the literature suggests that a considerable part of the differences in pay between male and female executives may be driven by the self-selection of women into certain occupations and industries and the higher or lower salaries awarded in this environment.[145]

5.2.3 Corporate Performance and Glass Cliff

A separate stream of research focuses on the relation between gender-differences in pay and company performance. Importantly, Niederle and Vesterlund (2007) do not find evidence that differences in performance are related to gender. Instead, differences in pay may be due to different attitudes concerning competition: the authors observe that men choose twice as much to engage in a tournament than women do, when choosing the relevant compensation scheme. This tendency is largely due to overconfidence in men and different preferences regarding the desire to perform in a competition in men and women. The authors suggest that women shy away from competition, while men tend to embrace it. In a follow-up study, Niederle, Segal, and Vesterlund (2008) investigate whether affirmative action can promote competitive behavior among women: interestingly, their experimental results suggest that by introducing gender-specific competition with the help of a female quota, the tendency among women to compete increases substantially.[146]

In line with these results, Kulich et al. (2009) argue that the managerial compensation of male executives is more performance-dependent than that of female executives, which implies that the gender pay gap is partially driven by company performance.

Another important and possibly even provocative idea establishes a link between the advancement of women and poor company performance. Ryan and Haslam (2005) examine the performance of FTSE 100 companies before and after the appointment of a board member, and state that companies appoint women as CEOs when the company experiences poor performance in the recent past. Consequently, so they argue, female CEOs are more likely to find themselves in an unenviable and possibly threatening situation after their appointment (Ryan and Haslam, 2005) – this idea is often referred to as the ‘glass cliff‘.

Adams, Gupta and Leeth (2009) put the ‘glass cliff’ hypothesis to an additional test, by examining the appointment of CEOs at US corporations over the years 1992-2004. They find

[145] In this case, differences in pay are not necessarily discriminating.
[146] This comes, however, at the cost of passing by better-performing men.

that corporate performance (ROA, ROE, EPS) preceding CEO appointments tends to favor females, implying that females (males) are appointed as CEO at times with relatively better (worse) financial health. Consequently, they conclude that female CEOs do not face a glass cliff at US firms, but tend to be appointed in industries that have a relatively larger portion of female workers. Interestingly, they state that women may self-select into leadership positions at firms in precarious financial health.

Haslam, Ryan, Kulich, Trojanowski and Atkins (2009) react to the findings of Adams et al. (2009) by analyzing FTSE 100 firms; they show that while there is no relation between women's presence on the board and accounting performance measures, stock-based performance measures (Tobin's Q) are negatively related to the presence of women on companies' boards. Therefore, Haslam et al. (2009) argue that women are found on boards of companies that have shown a poor performance preceding the presence of women, therefore substantiating their 'glass cliff' claim.

In sum, there seems to be some evidence that suggests that the appointment of women as CEO in many UK firms may be linked to bad performance.

5.2.4 Behavioral Biases: Romance of Leadership and Stereotypes

This section examines the differences in the choices and preferences of men and women concerning leadership, and consequently offers additional explanations of why so few female managers have corporate top jobs.

Research suggests that company performance is rather directly attributed to the leader and that only little attention is being paid to external factors (Meindl, Ehrlich, and Dukerich, 1985). But why is it that we observe so few females in a leadership position? According to a meta-analysis, female leaders are typically perceived slightly more negative than male leaders (Eagly et al., 1992).[147] The reason is that people compare their expectations of appropriate behavior with the actual behavior of men and females. In other words, a woman in a leadership position may violate the expectations about the proper role – the stereotype – of a female manager. Consequently, Eagly et al. (1992: 6) define the term gender-role congruency "as the extent to which leaders behave in a manner that is congruent with gender role expectations." In

[147] They base their analysis on evaluative measures of 61 studies, such as the perception of a leader's competence in terms of e.g. expertise or productivity, satisfaction with leader, or leadership style.

the absence of gender-role congruency, females seem to be devaluated more strongly (Eagly et al., 1992). But what is typically associated with leadership and why? Schein (2001) explains that a leader is typically associated with masculine traits, such as competence and the ability to influence. Managers in the UK possess characteristics that are more commonly ascribed to men than to women (Schein and Mueller, 1992): the authors show that both male and female management students hold the view that the characteristics of successful managers (e.g. leadership ability, analytical ability, dominance etc.) resemble those of men better than those of women. Likewise, female leaders seem to face prejudices, concerning a supposedly lower ability to lead (Eagly and Karau, 2002). In addition, the authors provide evidence of less positive attitudes towards female leaders, greater difficulties for females to become corporate leaders and to be recognized as successful in their role (Eagly and Karau, 2002). In sum, it might be due to this 'romance of leadership' that the shareholders' reaction to the announcement of a female CEO is significantly more negative than that of a male CEO (Lee and James, 2007).

Some recent studies even suggest that this 'romance of leadership' affects the allocation of pay: Kulich, Ryan, and Haslam (2007) are able to show that CEO pay is strongly performance-dependent for male executives, but not so for female executives. Moreover, they provide evidence that the allocation of a bonus to a female leader is not solely based on company performance, as it would be in the case of a male leader, but also on perceptions of charisma and leadership ability (Kulich et al., 2007). Consequently, they state that different processes determine the bonuses for male and female executives (Kulich et al., 2007). Kulich et al. (2011) suggest that the pay-for-performance sensitivity for male directors is higher. This corroborates the idea of Miller, Wiseman, and Gomez-Mejia (2002) that the pay-performance relationship increases with an agent's impact on performance.

Are there reasons to believe that there are differences in terms of performance, values, or risk attitudes between male and female leaders? Eagly et al. (1995) argue that in aggregate, male and female leaders were no more or less effective. However, they acknowledge gender differences regarding i) the definition of the leadership role in male or female terms, ii) the type of organization (e.g. strong preference for male leaders in the military, but a slight advantage for female leaders in business, government, and education), and iii) the level of leadership (Eagly et al., 1995). Adams and Funk (2011) show that women who make it to the

upper echelon of corporations are still significantly different from men in terms of values and risk attitudes. However, the observed dissimilarities are different from those in the general population: While the authors find that male directors care more about achievement and power than female directors, their results suggest that female directors are less security- and tradition-oriented than generally assumed. So, the question remains as to where this pay differences between male and females at corporate top jobs come from? Selody (2011) suggests that the biased views of male board members on women managers and their performance negatively affect the pay-setting process. The reasons for the lower pay of females on the board may be the supposedly lower competence of women. The author, however, also acknowledges that boards may correct their view about competence as soon as more information on the performance of the female executive directors becomes available.

In sum, both corporate performance and leadership seem to be more associated with masculine traits, while female leaders are often interpreted as not being congruent with their gender role. The concept called the 'romance of leadership' suggests that pay-for-performance of male leaders typically exceeds that of female leaders. Recent research suggests that part of this bias may be present at the board of directors, but may also be corrected as soon as information about the actual performance becomes available.

5.2.5 The Role of Remuneration Consultants

The setting of executive compensation contracts is typically delegated to the compensation committee – a sub-committee of the board of directors. The members of the committee usually lack the time and, more importantly, the specific knowledge needed to determine an ideal compensation contract (Conyon, Peck, and Sadler, 2006). Consequently, the sub-committee of the board needs to rely on internal advice and the expertise and assistance of remuneration consultants regarding the design of compensation packages (Bender, 2003, Thomas, 2004). Indeed, research shows that almost all firms in the UK employ some form of remuneration consultant (Conyon et al., 2006).

A main reason to rely on the advice of remuneration consultants is their specific knowledge and market-based experience, as well as data on the composition of remuneration packages (Bender, 2009). Importantly, they can offer their advice and help on the choice and construction of a suitable benchmark, as well as on relevant accounting and tax regulations.

According to Bizjak, Lemmon, and Naveen (2008), benchmarking is an effective method to estimate the reservations wage of an executive and a necessary input in the pay-setting process. It is usually this benchmark, however, that creates the biggest problem for the compensation committee, due to its key role in the determination of CEO pay (Bizjak et al. 2008). Another important reason to hire remuneration consultants is that they can help to legitimate the decisions of the compensation committee (Bender, 2009, Thomas, 2004). But is it obvious that the compensation committee can fully trust the advice of the remuneration consultants?

In principal, of course, remuneration consultants are hired to scrutinize the level and mix of pay of the company's senior management. Given the increasing focus on gender-based discrimination, remuneration consultants should particularly attempt to avoid negative publicity related to the discrimination of female top managers and thus contribute to a lower gender wage gap. Importantly, however, the consultants are aware of the fact that management hires them. Consequently, a consultant faces a conflict of interest and may avoid giving advice that results in negative publicity and damage to his current and future business (Thomas, 2004). But also the role of members of the compensation committee is questionable, as they are mostly hired and selected by the CEO: Anderson and Bizjak (2000) analyze the link between the compensation committee's independence and shareholder interest, and conclude that neither the fraction of outsiders, nor the fraction of outside executives on the compensation committee affect the sensitivity of CEO pay and total wealth. Instead, they suggest that any influence of committee structure on pay is offset by differences in ownership of the CEO. Nevertheless, it is the compensation committee that has a final say about taking the advice.

But does this potential conflict of interest between the shareholders and the company's pay consultants pose a major threat to the compensation committee's decision? According to the findings of Cadman, Carter, and Hillegeist (2010), this conflict seems not to be a primary driver of excessive CEO pay. In their study, they use various measures of conflict of interest and investigate whether those are related to greater CEO pay, but fail to find evidence to substantiate such a claim.

Other studies, however, observe that companies that pay large base salaries to their CEOs, as well as those with more concentrated and active outside owners, are more likely to use remuneration consultants to legitimate this decision (Wade, Porac, and Pollock, 1997). Conyon et al. (2006: 5) examine the relation between remuneration consultants and CEO

remuneration and suggest that "median CEO pay is greater in firms with consultants after controlling for firm size, firm performance, corporate governance, and ownership factors." Also other studies suggest that remuneration consultants are positively associated with higher salaries, but also with lower bonuses and total compensation (Cadman et al., 2010). Minhat (2008), for example, shows that the use of multiple remuneration consultants is associated with higher CEO pay, and also that there might be a relation between the market share of a remuneration consultant and the level of CEO pay of a client. Other studies suggest that CEO pay (and especially the equity-based component) is higher in firms with more consultants that offer various services, and also that there might be a relation between the market share of a remuneration consultant and the average level of CEO pay of a client (Conyon et al., 2006, Armstrong, Ittner, and Larcker, 2008, Minhat, 2008, Kabir and Minhat, 2011). Minhat (2008) also provides empirical evidence for the so-called ratcheting-up of CEO remuneration, i.e. the competition among pay consultants and executives contributes to a steadily increasing average of executive pay. But also the client network of consultants may play a role: Renneboog and Zhao (2011) suggest that relying on a remuneration consultant with a large client network may result in higher CEO pay, particularly in larger firms. Geiler and Renneboog (2011: 125) perform a structured survey of the literature on remuneration consultants and conclude: "While it has been argued that the use of remuneration consultants may help to achieve efficient contracting, there is evidence that suggests that they may actually support skimming."

In sum, many studies suggest that the usage of remuneration consultants is questionable, as it seems to be related to a higher and steadily increasing pay for CEOs – a development that may be attributed to the lack of independence of remuneration consultants.

Regulations On Wage Equality

"*Resorting to legal action may be effective in dealing with comparable worth within the same organization or jurisdiction, but it may prove ineffective and impractical because the disparities revealed (…) can be found across different organizations and jurisdictions*" (Alkadry and Tower, 2007: 896).

As has been addressed in the introduction to this article, the fight against gender-based discrimination has a long history in the British labor market. In what follows, we provide a brief summary of the regulations concerning wage equality and remuneration transparency focusing solely on the situation of women in the UK. The foundation of 'equal pay for equal

work' in the UK was established in article 119 of the Treaty of Rome. The contract prescribes that pay for the same work is to be compared at a piece rate using the same unit of measurement, and that this piece rate multiplied by the applicable time shall be the same for the same job.

In 1970, the UK introduced a national and more detailed law with the aim to prevent discrimination between men and women, called the Equal Pay Act. In addition to stating the requirement of equal treatment for women and men in the same employment, the act also details the enforcement of its provisions. In particular, the act prescribes that any claim regarding the employment contract, as well as concerning the applicable terms and conditions can be brought before an industrial tribunal, either by the person making the claim or by the person against whom it is made.

A new act was issued in 1975, the so-called 'sex discrimination act' that deals with discrimination against both women and men, as well as against married people. The novelty in this act was, that it prescribed the establishment of a Commission with the goals to work towards the elimination of discrimination and the promotion of equal opportunities for both sexes. This equal opportunities commission was to consist of at least eight but not more than fifteen individuals, each appointed by the Secretary of State with the above mentioned goals as duties and the assignment to keep under review the working of this Act and of the Equal Pay Act of 1970, including the right to conduct formal investigations.

Maternity rights have first been established by the Employment Rights Act of 1996, which details the terms for maternity leave: according to the Act, a female may, provided that she satisfies any conditions, which may be prescribed, be entitled to an ordinary maternity leave period of at least 26 weeks. At the same time, an employer must forbid an employee who satisfies the prescribed conditions to work during a compulsory maternity leave period. It is this act that details for the first time, that an employee who satisfies specified conditions, can be absent from work on leave for the purpose of caring for his child or supporting the mother.

Denise Kingsmill was asked by the government to conduct a report into women's employment and pay that was released in 2001.[148] In her report, she summarizes many potentially contributing factors to the gender wage gap in the UK. According to Kingsmill, the biggest improvement concerning the gender wage gap lies in human capital management:

[148] The full report can be accessed on the website of the CIPD: www.cipd.co.uk.

"The need to address issues of women's employment is not just a matter of creating a society in which men and women have equal opportunities and are equally valued for the contributions they make, important though these are. It is also a matter of ensuring the best use of the full range of available human capital to promote economic growth" (Kingsmill, 2001:6).

For example, she proposes to collect data on recruitment, career development and the reasons for leaving within an organization to be able to properly monitor the position of men and women and to be able to act if need arises.

The Equal Pay Task Force released a report called 'Just Pay' in 2001, in which three main factors contributing to the pay gap are identified: (1) discrimination in pay, (2) occupational segregation, and (3) the unequal impact of family responsibilities. According to this report, there has been insufficient concerted action by various groups, including employers, trade unions, and the government, to reduce pay differences between men and women. The report proposes a substantial change in the equal pay legislation and the right for trade unions or staff representative to complain to the Central Arbitration Committee.

The Employment Equality Regulations, released in 2005, provides a new definition of indirect sex discrimination, forbids discrimination on the grounds of pregnancy or maternal leave, and issues rules on harassment and sexual harassment.

According to the arguments proposed by the Women and Work Commission (2006), women seem to be pushed into low-paying occupations and do not make full use of their skills. The Commission estimates that removing the barriers to women working in occupations traditionally done by men, and increasing women's participation in the labor market, could be worth about 1.3 to 2.0 per cent of GDP (Women and Work Commission, 2006: VII). The Women and Work Commission (2006) identifies several important steps to take, including the comprehensive information of women on available jobs, improving the situation of women concerning the balance between work and family, and ongoing opportunities for training and work.

Overall, the frequency that regulations concerning gender-based discrimination have been issued has increased in recent years, indicating that discrimination of women has substantially come into the focus of regulators, employer, and the public alike.

5.3 The Present Study

While wage equality at the junior level has been achieved, the question remains whether female discrimination persists at the corporate top jobs. Despite the existence of ample theories on this issue, empirical proof has remained scarce due to the limited number of females who make it to this level. This study aims to answer the question whether the discrimination of females continues at the top corporate level and puts a multitude of existing theories to a test: Previous research demonstrates that female executives receive fewer outside offers and that the likelihood of a company reacting with a salary increase is lower in the case of women (Booth et al., 2003). A consequence of the 'sticky floor' idea is, that the likelihood of women receiving a pay rise is lower than that of a male. According to the idea presented by Allen and Sander (2002), work that is predominantly done by women is valued less in society and consequently rewarded less than the same work done by men. They claim that the more women work in a certain area, the lower the remuneration in that area becomes (Allen and Sander, 2002). Relying on the results of these studies, we hypothesize that on average, female directors are paid less than men (H1a), and that the gender pay gap is higher in industries with a high concentration of males (H1b).

Recent studies on the differences between men and women regarding their choice of a compensation scheme reveal that men opt twice as frequently to engage in a corporate tournament than women do – a tendency that is largely attributed to overconfidence on the part of men (Niederle and Vesterlund, 2007). Research on the relation between compensation and performance presents convincing evidence that managerial compensation of male executives is more performance-sensitive than that of female executives (Kulich et al., 2009). Kulich et al. (2007) provide evidence that the allocation of a bonus to a female leader is not solely based on company performance, as it would be in the case of a male leader, but also on perceptions of charisma and leadership ability. Consequently, we hypothesize that the compensation contracts' composition of male and female executive directors is different (H2a), and that the pay-for-performance sensitivity is lower for female managers than for male managers (H2b).

The percentage of females on the board seems to be related to the number of women working in corporate top-jobs, possibly due to 'networking-effects' (Matsa and Miller, 2011). Likewise, Smith et al. (2011) observe that the hiring probabilities of women increase with a higher number of females on the board. While Selody (2011) suggests that boards may have

biased beliefs about the competence of women, an increased number of women on the board may help to correct this view. Hence, we hypothesize that companies with a higher percentage of females on the board will attract more female executives and pay them more than firms with fewer female board members (H3a).

Governance may also affect executive pay (Wade et al., 1997): a larger board and a higher proportion of non-executive directors on the board may, due to the increased variety of opinion, contribute to a more balanced decision-making and therefore offset some of the behavioral biases discussed above. Moreover, the separation of the positions of CEO and chairman may make it even easier to remove poorly performing managers (Renneboog and Trojanowski, 2011). Consequently, groundless differences in pay between men and women decrease in better-governed companies, as measured by the size of the board, the proportion of non-executive directors on the board, and the presence of nomination-, remuneration-, and audit committee, as well as by the absence of CEO duality. Therefore, we hypothesize that the pay gap is smaller in firms with better internal (board structure) corporate governance mechanisms (H3b).

The literature on the role of pay consultants details that it may be in their interest to avoid negative publicity, which may, in turn, negatively affect their current and future career (Thomas, 2004). With gender-discrimination moving more and more into the public eye, remuneration consultants should attempt to avoid negative publicity related to the discrimination of female top managers and contribute to a lower gender wage gap. This may particularly hold true for the largest pay consultants that are subject to intense competition and the immediate threat of loosing market share. Indeed, recent studies suggest that competition substantially affects the way in which remuneration consultants behave (Kabir and Minhat, 2011). Consequently, we hypothesize that Top 4 remuneration consultants contribute to a reduction of the pay gap between male and female top managers (H4).

In addition to the hypotheses presented above, previous research suggests that the compensation committee typically considers the specific tasks, seniority and experience, as well as the salary awarded at other firms in the same industry, when determining a manager's salary (Geiler and Renneboog, 2011). However, experience seems only to have a minor and further diminishing influence on the gender wage gap (Simon, 2011). Moreover, inflationary

tendencies may result in an increasing level of pay over time. Consequently, we conjecture that pay increases in position, age, and tenure, and depends on the relevant industry and year.

Concerning firm characteristics, studies show that pay typically increases with the size of a firm and growth in sales (Murphy, 1985, Jensen and Murphy, 1990). In addition, executive compensation is to a certain degree related to free cash flow (Kaplan, 1994). Therefore, we conjecture that pay increases in firm size, by taking into account the index membership (FTSE100, FTSE250, FTSE Small Cap), sales growth, and free cash flow.

5.4 Data & Methodology

5.4.1 Sample and Data Sources

We examine a sample that covers virtually all the firms listed in the UK. Three datasets are merged: the Manifest database provides us with detailed information on the presence of a female director (Female), director characteristics (Director Age and Director Tenure[149]), remuneration (Total Pay, Base Salary, Bonus, Incentive Pay), as well as governance (Boardsize, Firm Risk, etc.). We check our data with the information available from BoardEX, particularly concerning our position characteristics (CEO, Finance Director, COO, etc.). We also bring in more detailed information from Datastream, concerning performance (Return on Assets, Tobin's Q), ownership (CEO Ownership, Executive Ownership, etc.) and various firm characteristics (Free Cash Flow, Sales Growth, Leverage, etc.), as well as indices (FTSE100, FTSE250, etc.) and sector information (Energy, Utilities, Media, Mining, etc.).

In total, we dispose of 33,628 individual-year observations of executives (excluding CEOs) and of 12,011 CEO observations. The CEO sample also includes the highest-ranking director, in case a CEO is not present.[150] We dispose of full remuneration information on each of these individuals in a given year: our data set covers a time period of 12 years, lasting from 1997 up until 2007. We made a few adjustment to the length of the financial year: i) in case the reported length of the financial year deviates from the standard assumption of 365 days, we adjust the accounting and remuneration information accordingly, ii) when a financial year does not coincide with the reported calendar year, we apply the following rule: if the reported end of

[149] The collinearity between age and tenure is low.
[150] More information on the definition of top managers is available upon request.

the financial year lies within the first six months of a given year, the entry belongs to the preceding calendar year, whereas when the yearend is within the last six month of a given year, we relate the information to the current calendar year, and iii) to take care of inflation in the relevant compensation measures, all data are in 2007 real terms. The yearly figures of the consumer price index for the UK was collected from the website of the Office for National Statistics.[151]

5.4.2 Variable Descriptions

Compensation Measures

In contrast to many previous studies, we use several compensation components to examine the differences in pay between male and female executive directors and CEOs. For our main analysis, the primary dependent variable is the total year-end compensation (natural logarithm expressed in £1,000). We also study a number of additional compensation components: i) base salary, ii) bonus, iii) long-term incentive pay, calculated as the sum of the Black-Scholes value of stock options awarded and the total value of long-term incentive plans (LTIPs), and iv) the ratio of short-term versus long-term pay, calculated as base salary plus bonus, divided by long-term incentive pay.

Figure 5-4 details how the mean total compensation for all executives has evolved over the years 1996-2007. Not surprisingly, total compensation has risen substantially for both male and female executives over this period. A higher mean total compensation for males than for female executives reveals a gender pay gap, but a closer look shows that the size of the pay gap varies over time. The pay gap (to the benefit of male mangers) exists in virtually all sample years (with exception of 2003).

[Insert Figure 5-4, about here]

Figure 5-5 shows the mean gender pay gap by index for the full sample. The leftmost column represents average total pay for male top managers. The column to the right represents the mean total compensation awarded to all female top managers. While the discrepancy between these two columns is rather large with a difference between roughly £280.000 of total compensation for all males and of £160,000 for females, this is not true for all indices

[151] The website can be accessed under: http://www.ons.gov.uk.

(FTSE100, FTSE250, FTSE Small Cap, and FTSE Fledgling). In fact, the biggest gap stems from those companies belonging to the FTSE100, while the difference between total pay of male and female executives and CEOs of firms belonging to the FTSE Fledgling are almost negligible.

[Insert Figure 5-5, about here]

Figure 5-6 shows the mean gender pay gap for executives (excluding CEOs) by index. While the results for the total sample indicate that on average a lower total compensation is awarded to female executives, the results for the FTSE100 suggest the reverse: the average total compensation of female executives exceeds that of male executives. As for those firms belonging to the FTSE250, FTSE Small Cap, and the FTSE Fledgling, we again see that on average female executives are awarded a lower total compensation.

[Insert Figure 5-6, about here]

Figure 5-7 shows the mean gender pay gap for CEOs by index. Somewhat surprisingly, the difference in average total compensation between male and female CEOs is lower than for executives (excluding CEOs). Interestingly, it seems that average total compensation of female CEOs slightly exceeds the one of their male counterparts. Considering the firms belonging to the FTSE100, the FTSE Small Cap, and the FTSE Fledgling, we see that total compensation of male CEOs is higher on average. The results for the firms listed on the FTSE250, however, come as a surprise: the pay gap for the CEOs is reversed, as female CEOs are on average paid a higher total compensation than male CEOs.

[Insert Figure 5-7, about here]

Treatment and Discrimination Variables

The treatment variable in our analysis is 'Female' – a dummy variable that is equal to one if a female director is present, or zero otherwise. Similarly, we use the female dummy in our Tobit models (see below) to examine the effect of gender-based discrimination. In a second step, we interact our female dummy with a number of variables, such as: i) corporate performance, ii) managerial positions within the firm, iii) governance variables and, iv) the presence of a Top 4 remuneration consultant (see below for more details).

Control Variables

Previous research indicates that a wider variety of variables may affect the compensation decision. Consequently, we need to control for these effects and include: a) Positions, in the form of dummy variables for a CEO, Executive Chairman, Finance Director, Commercial Director, COO, and Other Executives, b) Director Characteristics, such as the age and tenure of the director, c) Governance measures including the size of the board, the percentages of non-executive and female directors on the board, the presence of an audit, nomination, and remuneration committee, the advice of a Top 4 remuneration consultant and the presence of a CEO as chairman of the board, as well as firm risk (measured as the variance of cash flows), d) Performance measures: following the example of Kulich et al. (2009), we use Return on Assets (ROA) and Tobin's Q (Q), the latter of which is calculated as the sum of market capitalization over stockholder equity, to proxy for firm performance, e) Ownership characteristics that detail the percentage of ownership in the firm of CEO, non-CEO-executives, and non-executive directors, as well as of corporations, pension funds, individuals and families, and lastly of institutions, f) Firm Characteristics, such as free cash flow over assets, sales growth, leverage (measured as debt/equity), and the index to which a firm belongs (FTSE100, FTSE250, FTSE Small Cap, FTSE Fledgling).

5.4.3 Treatment Effect Estimation

We aim to answer the question: "Are female top managers discriminated in pay based on their gender?" Answering this question has important policy implications and has been a hotly debated topic in academic research. In order to investigate this issue, we use treatment effect estimation to compare the average pay outcome e.g. in total compensation of females, under gender-based treatment ('discrimination') to the average pay outcome of males ('controls'). If we were able to observe both pay outcomes for the same individual, the average effect of gender-specific treatment (ATE) on a pay component could be calculated as: $Y_i(1) - Y_i(0)$, where $Y_i(1)$ depicts the total compensation at year-end in £1,000 for individual i under treatment and $Y_i(0)$ depicts the same outcome under control. In our case, both men and female executives receive a treatment in the literal sense. The ATE estimated in an OLS-setting does

not take into account the heterogeneity among individuals and thus assumes that the effect is the same for all top managers. However, the average treatment effect for the treated (ATET), which is the expected difference in total compensation for a female director, assumes that the gender-specific effect on pay differs across individuals: $\tau = E[Y_i(1) - Y_i(0)|W_i = 1]$, where $W_i \in \{0,1\}$ indicates whether an individual receives gender-specific treatment (i.e. 'discrimination') or not.

Since we only observe female directors with $W_i = 1$ (and male directors with $W_i = 0$) by definition, we substitute the missing observations using an observation of the opposite gender group. To reduce the bias in our treatment effect estimation introduced by the existence of confounding factors, we take into account a whole vector X_i of variables including firm size, director age, director tenure, position, industry, and year. In other words, we compare the average difference in our pay variable Y_i of both treated and controls, given that our matches are similar in all observed characteristics. We assume that X_i is a vector of observed characteristics affecting both the treatment and the outcome variable (unconfoundedness assumption) [152], and that we observe both treated and controls with similar values concerning the observed characteristics (overlap). [153] That is, we assume that by conditioning on our set of observables, we are able to remove differences in the pay outcomes in the 'untreated' state between female and male executives. In other words, the unconfoundedness assumption states that the pay outcome in the 'untreated' case is independent of the treatment (gender-based discrimination), conditional on our set of observable characteristics. Put differently, the assumption is that the pay of an executive of the same age, position, experience, in a similar sized company, in the same year, and industry is unrelated to what it would be in the case of discrimination. According to Black and Smith (2003: 109): "The key difference between matching and linear regression is that regression makes the additional assumption that simply conditioning linearly on X suffices to eliminate selection bias." The overlap assumption means in our case that for each X, there must be an executive who does not get treated/discriminated.

As matching on many covariates can be difficult, we follow Rosenbaum and Rubin (1983) and calculate a single propensity score to reduce the number of dimensions to one. The propensity score expresses the propensity of treatment given the observed covariates X_i. For

[152] Valid Unconfoundedness implies that there is no omitted variable bias (Cameron and Trivedi, 2005: 863).
[153] Possible unobserved heterogeneity, such as position-related ability, negotiation skills, and motivation are taken up by the error term of the treatment effect estimation.

the estimation of the propensity score, we rely on a logit model of our observable characteristics X_i on our treatment variable W_i of the following form:

$Pr(W_i = 1|X_i) = \frac{e^{\lambda h(X_i)}}{1+e^{\lambda h(X_i)}}$, where $h(X_i)$ is made up of linear terms of our covariates without interactions or higher order terms. We then match treated observations with controls similar in their propensity score. According to Rajeev and Wahba (2002), matching implies three major decisions:

First, there is the choice of the applicable matching method. According to Sianesi (2011), the range of available matching methods includes k-nearest neighbor matching, radius matching, kernel-based matching and local linear regression-based matching. Nearest-neighbor matching is still the standard procedure, however, in which individual i is matched to control j such that the distance between their propensity score is minimized:

$|e_i - e_j| = \min_{k\epsilon\{W_i = 0\}}\{|e_i - e_k|\}$, where e_i is the propensity score of individual i. The main advantages of this method are that one can compare the results to existing studies and that it is readily implemented in Stata.[154] The downside of this method is that it lacks the possibility of more advanced procedures to smooth the information from multiple observations.

Second, there is the issue of matching with or without replacement. Allowing matching with replacement helps to minimize the distance between the propensity scores of treated and control observations, which in turn leads to a lower bias. The disadvantage of matching with replacement is, however, that the precision is typically lower than in the case of matching without replacement and that the final sample consists of duplicate observations of the same match, which can be difficult to deal with in respect of further analysis. In contrast, the downside of matching without replacement is that the order of matching may become important (Rosenbaum, 1995). This problem can, however, be solved when one takes the order of the matching into account, as well as the estimation of the propensity score when computing standard errors (Caliendo and Kopeinig, 2005).

Third, one has to decide on the number of comparables that one uses. Matching with a single comparable ensures the smallest distance in propensity scores between treated and control, and consequently yields the lowest bias – however, with a somewhat lower precision (Rajeev and Wahba, 2002, Imbens, 2004). In contrast, matching with several controls offers

[154] We use the procedure psmatch2 that was developed for Stata and documented by Leuven and Sianesi (2003).

the advantage of taking the information of more observations into account yielding a higher precision, but at the cost of a higher bias.

As a result, we decide to use nearest-neighbor matching to minimize the bias in our estimation. We follow the argument of Imbens (2004) that relying on a single match yields the least bias - although at the cost of a minor decrease in precision. We match without replacement, after first randomizing our observations and second re-estimating standard errors using bootstrapping. [155] In a second step, we also match with replacement to check the robustness of our results.

5.4.4 Tobit Regression

As more than a quarter of the observations in our sample indicate that directors do not receive a bonus in a given year, the distribution of the dependent variable is truncated. It is therefore important to study whether our results are upheld in the presence of censoring. Accordingly, we re-test our hypotheses within a Tobit regression framework (see Amemiya, 1984), in which the regression of interest is specified as follows: $y_i^* = x_i'\beta + \varepsilon_i$, with y^* being the latent unobserved variable and x_i being the vector of observed covariates, i denoting the individual, and the error term following a normal distribution stated as: $\varepsilon_i \sim N(0, \sigma^2)$. The outcome variable y is only observed if the value of our latent variables exceeds L: $y = \begin{cases} y^* \; if \; y^* > L \\ L \; if \; y^* \leq L \end{cases}$. Then, the expected value of y^* can be calculated as: $E(y_i|x_i, y_i > L) = x_i'\beta + \sigma \frac{\phi\{(x_i'\beta - L)/\sigma\}}{\Phi\{(L - x_i'\beta)/\sigma\}}$, where ϕ is the standard normal density. Taking this into account, we estimate the following regression model:

$$
\begin{aligned}
Y_{it} = \alpha + \boldsymbol{\beta_1} \times \boldsymbol{Female\ Presence_{it}} \\
+ \beta_2 \times Positions_{it} \\
+ \beta_3 \times Director\ Characteristics_{it} \\
+ \beta_4 \times Governance_{it} \\
+ \beta_5 \times Performance_{it} \\
+ \beta_6 \times Ownership_{it} \\
+ \beta_7 \times Firm\ Characteristics_{it}
\end{aligned}
$$

[155] We choose a number of 100 replications after comparing the bootstrap estimates of various seed values and identifying no meaningful change in the results.

$$+ \sum_{k}^{42} \delta_k \times Sector_k + \sum_{t=1997}^{2007} \varepsilon_t \times Time_t.$$

The dependent variable Y_t is the ln of total compensation at year-end in real terms (2007 terms) and given £ 000s. We extend the analysis by replacing the dependent variable by (the natural logarithm of): i) base salary, ii) bonus, iii) long-term pay, as well as iv) short-term pay over long-term pay, calculated as the sum of base salary and bonus, divided by incentive pay. Female Presence consists mainly of our Female Dummy, which indicates whether the director in question is female or male. At a later stage, we interact our female variable with performance variables, position dummies, and governance characteristics. Our Position measures are dummy variables equal to one if a director holds the position of a CEO, Executive Chairman, CFO, Commercial Director, COO, or Other Executive, and are zero otherwise. The Director Characteristics include director's age and director's tenure on the board. The Governance variables consist of Boardsize, the percentage of non-executive directors and females on the board, the presence of an audit-, nomination-, and remuneration committee, the advice of a Top 4 remuneration consultant, as well as a proxy for the chairmanship of a CEO, and our variable firm risk, measured as variance of cash flow. We include Return on Asset and Tobin's Q as measures for Performance. The Ownership characteristics include the percentage of shares by CEOs, executive directors (excl. the CEO), non-executive directors, corporations, pension funds, individuals and families (not related to a director), and institutions. Our Firm characteristics comprise the winsorized free cash flow per assets, sales growth, and leverage (calculated as Debt / Equity), as well as dummies indicating whether a firm is listed on the FTSE 100, FTSE 250, or FTSE Small Cap. All regressions include sector, and year dummies.[156]

5.5 Results

5.5.1 Sample Statistics

Table 5-1 presents the univariate statistics for the full sample of the top managers and enables us to compare the remuneration of the executives on the board with that of the CEOs.

[156] We adjust all the standard errors for clustering at the position-level.

[Insert Table 5-1, about here]

The majority of directors in the executive sample, i.e. roughly 80%, are in the function of Finance Director. We observe differences between male and female directors with respect to the positions they assume on the board: there is a higher percentage of female executives employed in the function as Finance Director or Commercial Director, where male executives are more likely to be employed as Executive Chairman.

On average, total compensation awarded to executive directors amounts to about £528,000, while in the case of a CEO, it amounts to £800,000. Again, there are differences both in the level of total pay and the various pay components between male and female top managers: On average, male executives earn more (£418,650) than female executives (£391,590). Clearly, the gap in total pay between male and female executives is driven by differences in Base Salary and Bonus. Interestingly, total pay awarded to female CEOs (£865,010) typically exceeds that of their male counterparts (£800,110) – these differences are not statistically significant, however.

CEOs are on average older and more experienced than executive directors. However, both female executives and female CEOs are younger and less experienced than their male counterparts.

Firms with female executive directors are different from those with only male executive directors, as they dispose of larger boards and a higher percentage of non-executive directors on the board. While there is a larger likelihood of an audit committee and the advice of a Top 4 remuneration consultant, firms with female directors show a somewhat lower likelihood of disposing of a nomination committee or a remuneration committee.

Interestingly, firms without female directors on the board show a higher performance at the median with a ROA of 4.2% and a Q of 2.01. As for ownership, we find that firms with female directors on the board have a somewhat higher concentration of executive ownership, non-executive ownership, industrial ownership, and individual & families ownership.

Lastly, firms with females on the board are relatively similar to firms with only males on the board concerning various firm characteristics: firms with females on the board are slightly different in terms of the levels of free cash flow and leverage, and tend to stem more from larger firms than firms with only male top managers.

5.5.2 Treatment Effect Estimation

Are female executives paid less than their male counterparts? We aim to shed more light on this question by using a treatment effect estimation, which takes into account the heterogeneity among the executives by correcting for the position, age, and tenure of an individual, as well as the firm characteristics in terms of size, industry, and year. We then use several measures of compensation to evaluate the determinants of the gender wage gap.

Table 5-2 presents the details of our analysis: The dependent variables (the various components of pay and their relative importance in the whole pay package) are on the left-hand side while the right-hand side shows the average effect of gender-specific treatment on both executives (excluding CEOs) and CEOs. Given that the estimation of the propensity scores affects the estimated standard errors, we re-estimate them by means of bootstrapping.

[Insert Table 5-2, about here]

In sum, the results suggest that female executives do indeed receive less compensation: their base salary is substantially reduced by about £19,947 (-16.4%). The bonus of female executives is about £25,604 (-22%) lower than that of male executives – a finding that is roughly in line with the results of Kulich et al. (2009), who report an estimate of -£33,510. As for incentive compensation, we find that it is on average diminished by the amount of £222,043 (-56.8%). Taken all the effects together, this leads to a reduction of total compensation of about £269,069 (-13.4%). All the coefficients are statistically significant at the 1%-level.

Interestingly, in the case of CEOs, all but one of these measures remains insignificant. While the coefficients for base salary, bonus, and incentive compensation point into the same direction and are partly of about the same size, albeit insignificant, we do not find these similarities concerning total compensation. Instead, our analysis shows that on average ln(total compensation) seems to be reduced by about 25.8% at the 10%-level of significance.

Overall, the results of our treatment effect analysis show a substantial discrimination of female executives in various components of pay, in line with our initial hypothesis (H1a). Interestingly, this gender-related effect on pay seems to be largely restricted to executive

directors. We only find weak evidence that the total compensation of female top managers is affected by discrimination.

5.5.3 Tobit Regression

Are the results from the treatment effect estimation upheld, given that many of our compensation measures are left-censored? Is the composition of the compensation contracts different for males and females? And are there differences in pay-for-performance of both male and female executives? To examine these and the remaining questions implied by our hypotheses, we employ various Tobit regressions on the different components of pay.

Compensation of Executive Directors (excl. CEOs) and CEOs

To test whether the results from our treatment effect estimation are upheld, we start out with a regression using our 'main model', i.e. a Tobit regression on the natural logarithm of total compensation. Table 5-3 presents the results for executive directors. The analysis is based on 15,381 executive observations and yields an R2 of about 0.186. In addition to our main model on total compensation, we perform the same regression also on base salary, bonus, long-term incentive pay, and the ratio of short-term versus long-term pay yielding an R2 of 0.194, 0.165, 0.137, and 0.052, respectively. In all 5 models, we adjust for year-fixed effects and industry-fixed effects. In addition, we allow for intra-group correlation, by clustering the standard errors at the position level.

[Insert Table 5-3, about here]

Our variable on the presence of a female director shows interesting results: Female executive directors seem to be discriminated against in terms of compensation: they can expect to receive a 17.3% lower total compensation than their male counterparts. This finding is roughly in line with the result from the treatment effect estimation of -13.4%. This result is statistically significant at the 1%-level and consistent with our hypothesis (H1a) that female executive directors earn less than their male counterparts.

Moreover, this gender pay gap in total pay is driven by differences in various pay components: we observe a reduction of 12.3% in Base Salary, of 24% in Bonus, and of 33% in Long-Term Pay. All these results are statistically significant at the 1%-level. These results are

in line with our hypothesis (H2a) that the composition of the compensation contracts is different between male and female managers.

Considering the various positions that our executives assume and compared to the function of Executive Chairman, we observe that a CEO typically gets an 8.4% higher total pay, while directors in the functions of Finance Director (-9.1%) or Commercial Director (-25.7%) can expect to receive a 9.1% or 25.7% lower total compensation, respectively. However, a CEO typically does not receive the highest Base Salary, but his level of Bonus and Long-Term Pay is not significantly different from that of an Executive Chairman. Notable, the level of LT-Pay that a director in the role of Finance Director can expect is about 25% lower than that awarded to a CEO.

Interestingly, the age of an executive director is negatively related to the compensation measures (with the exception of the Bonus). This is roughly in line with the results for employees in various countries as presented by Simon (2011). A possible explanation for this could be that younger executives' compensation is more tilted towards Long-Term Pay, in order to establish greater incentives and simultaneously to benefit from their supposedly greater willingness to perform. We observe coefficients for age on total compensation and on Long-Term Pay of -0.011 and -0.007, respectively. In other words, a 10-year younger executive gets 11% more total compensation, and 7% more Long-Term compensation. At the same time, we observe a shift towards a lower focus on short-term compensation with a coefficient of 0.008 for ST/LT-Pay. All these results are statistically significant at the 1%-level.

Various governance characteristics contribute to a shift towards a more long-term oriented compensation and consequently to a higher total compensation. Boardsize, the percentage of non-executive directors and the percentage of females on the board are positively related to total compensation and various pay components, the single largest impact of which is on Long-Term Pay. We find coefficients in the range of 0.013-0.048 for Boardsize, of 0.005-0.014 for the percentage of non-executive directors, and of 0.001-0.006 for the percentage of females on the board. Both, boardsize and the percentage of non-executive directors are negatively related to ST/LT-Pay, with coefficients of -0.037 and -0.007, respectively. All these coefficients are significant at the 5%- or 1%-level.

While the presence of an Audit Committee rather contributes to a lower total compensation and many of the pay components, we also observe a positive coefficient of 0.488

for LT-Pay. In other words, the presence of an Audit Committee tilts executive compensation more towards long-term compensation and away from short-term compensation, which can also be observed from the coefficient of -1.099 on ST/LT-Pay. Again the results are significant at the 5% or 1%-level. The presence of a nomination committee seems to contribute to Base Salary, LT-Pay, and hence to total compensation, while the presence of a remuneration committee seems only to reduce the level of bonus awarded to an executive director. The observed coefficients are 0.148, 0.193, and 0.214, as well as -0.908, respectively. Again all the coefficients are statistically significant at the 5%- or the 1%-level.

Interestingly, the advice of a Top 4 remuneration consultant is positively related to the level of compensation. We observe that the advice of a Top 4 remuneration consultant is associated with an increase in total compensation of 13.6% and with a rise in Base Salary, Bonus, and LT-Pay of 7%, 12.4%, and 13.3%, respectively. The chairmanship of a CEO is related to an increase in short-term pay and a decrease in long-term pay: we observe coefficients for Base Salary, Bonus, LT-Pay, and ST/LT-Pay of 0.411, 0.238, -0.899, and of 1.436, respectively. All the coefficients are statistically significant at the 1%-level.

Lastly, firm risk is typically reflected in higher total compensation, base salary, and long-term pay. An increase in firm risk of 10% is associated with a rise of total compensation of roughly 56%. The aggregated effect of firm risk on the ratio of short-term versus long-term pay is negative, hence putting a greater value on long-term compensation. The corresponding coefficients are significant at the 1% level.

The performance variables indicate that compensation is strongly performance dependent: a 10% increase in performance is associated with a corresponding increase in total pay of about 8%. In a similar situation, we observe an increase in Bonus of 16% and in LT-Pay of 6%. Long-Term Pay is also positively associated with Tobin's Q: a 10% increase in Q is related to a 37% increase in LT-Pay. At the same time, Q is associated with a greater focus on Long-Term Pay, as indicated by the coefficient of -0.049 for ST/LT-Pay. All coefficients (with the exception of ROA on LT-Pay) are significant at the 1%-level.

Ownership is typically associated with lower compensation: executive ownership, non-executive ownership, industrial ownership, and individual and families' ownership show coefficients of -0.004, -0.012, -0.002, and -0.005 – all significant at the 1%-level. While Executive Ownership, Individual & Families Ownership, and Institutional Ownership are

associated with a stronger focus on short-term pay, CEO Ownership and Pension Fund Ownership are related with compensation that puts less weight on Short-Term Pay. The observed coefficients are 0.006, 0.012, 0.002, as well as -0.011 and -0.024, respectively.

Considering firm characteristics, we observe sales growth, leverage, and size to be positively related to compensation, while free cash flow is negatively associated with compensation. The reasons may be that faster growing and larger firms (as measured by index membership), which typically are also more levered, tend to pay higher compensation. Table 5-4 presents the corresponding results for CEOs. The analysis is based on 4,529 CEO observations and yields an R2 of about 0.296. As before in the case of executives, we perform the same regression also on base salary, bonus, long-term incentive pay, and the ratio of short-term versus long-term pay yielding an R2 of 0.521, 0.192, 0.137, and 0.194, respectively. Again, we adjust for year-fixed effects as well as industry-fixed effects and allow for intra-group correlation, by clustering the standard errors at the position level.

[Insert Table 5-4, about here]

Most interestingly, female CEOs are discriminated against in terms of compensation: Female CEOs can expect to receive an 8.4% lower total compensation, and an 8.2% lower Base Salary. The discrimination that female CEOs face is, however, considerably less than the discrimination that female executive directors face. It is also substantially less than the reduction in total compensation indicated by the results of the treatment effect estimation (-25.8%). Moreover, the pay difference in total compensation seems to be due to the discrimination in Base Salary. The coefficients are statistically significant at the 1%-level. These results are consistent with both our hypothesis (H1a) that female executive directors earn less than their male counterparts and our hypothesis (H2a) that the composition of the compensation contracts is different for male and female managers.

As before, Director Age is negatively related with Long-Term compensation, but positively related with Base Salary. An explanation for this could be that the compensation of younger executives is structured to create larger Long-Term incentives, while age is associated with a higher Base Salary. The coefficients are -0.005 and 0.017, respectively. Similarly, we find Director Tenure to be negatively related with LT-Pay and positively related with ST/LT-Pay. In other words, the level of long-term incentive pay is reduced with greater experience.

With respect to our governance variables, the coefficients are in general very similar to the ones in the executives (excl. CEO) regressions, albeit somewhat higher at times. For example, a 10% increase in boardsize is associated with an increase in total compensation of roughly 50% (instead of 27% in the case of Executives). The presence of an audit committee is now even stronger negatively related to Long-Term Pay: we observe a coefficient of 1.324 that is statistically significant at the 1%-level. The presence of a nomination committee is now significantly negatively related with ST/LT-Pay, while the presence of a remuneration committee is associated with lower Base Salary (-32%), Bonus (-132%), and LT-Pay (-56%).

As before, the advice of a Top 4 remuneration consultant is related to a 15% increase in total compensation and the chairmanship of a CEO is weakly but positively associated with higher total compensation, but is highly significantly associated with greater LT-Pay. We find a coefficient of 0.033 that is significant at the 10%-level and a coefficient of 0.290 that is significant at the 1%-level. In other words, the presence of a CEO as chairman of the board of directors is associated with a 3.3% increase in CEO total compensation and with a 29% increase in incentive compensation.

Firm risk is strongly associated with total compensation and Bonus for CEOs: we find coefficients of 0.093 and 0.089, indicating that a 10% increase in firm risk is associated with a 9.3% higher total compensation, and a roughly 8.9% higher Bonus. Likewise, we observe a 3.8% increase in Base Salary and a greater tendency towards short-term pay. All results are statistically significant at the 5%- or the 1%-level.

Interestingly, concerning our performance variables, we find the coefficients to be very similar to the ones observed for executives (excl. CEOs), albeit somewhat higher in the case of ROA. For example, the coefficient for ROA on Total Pay and Bonus is now 0.010 and 0.018, respectively (instead of 0.008 and 0.016 in the case of executives). Both coefficients are statistically significant at the 1%-level. In other words, compensation for CEOs is more performance sensitive than that for executives (excl. CEOs). Notably, in the case of Q, the coefficients are somewhat different: we find the coefficients on LT-Pay and ST/LT-Pay to be 0.035 and -0.033, respectively.

The coefficients of the ownership variables are comparable to our earlier findings in size, direction, and significance. Now, we also observe that CEO ownership is negatively related to total compensation. We find a coefficient of -0.006 that is statistically significant at

the 5%–level. In other words, a 10% increase in CEO ownership concentration is associated with a 6% reduction in total compensation. As before, we find Individual & Families Ownership and Institutional Ownership, but also Industrial Ownership to be positively associated with the ratio of short-term versus long-term pay. The coefficients of 0.004, 0.002 and 0.004 are significant at the 5%, 10%, and 1%-level, respectively.

As before, free cash flow is negatively associated with compensation in general, but positively associated with Base Salary. In contrast, Sales Growth is negatively associated with Base Salary, but positively related to Bonus and Long-Term Pay. The observed coefficients are -0.082, 0.184, and 0.085, respectively. All coefficients are significant at the 5%- or the 1%-level. Leverage is positively associated with all single components of pay, but negatively associated with ST/LT-Pay, i.e. leverage is related to a tendency away from short-term orientation. Again, larger firms (as measured by index membership) are associated with higher total compensation and higher LT-Pay (with the exception of firms that are member of the FTSE Small Cap).

Performance Sensitivity of Executive Directors (excl. CEOs) and CEOs

Is the compensation of female top managers more performance sensitive than that of their male counterparts? To investigate this issue, we perform a regression similar to our main model but including female-interacted performance variables. As before, the analysis is based on 15,381 executive observations and yields an R2 of 0.186. In addition to total compensation as dependent variables, we perform the regression also on base salary, bonus, long-term incentive compensation, and ST/LT-Pay yielding an R2 of 0.197, 0.165, 0.137, and 0.052, respectively. We adjust for year fixed effects and industry fixed effects and allow for intra-group correlation, by clustering the standard errors at the positions level. The results for executive directors are presented in Table 5-5.

[Insert Table 5-5, about here]

Female executive directors are discriminated against in compensation: a female executive director can expect to receive a total compensation that is reduced by 12.6%, on average. This is very close to our initial results of the treatment effect estimation of -13.4%.

Likewise, we observe a reduction in Base Salary, Bonus, and LT-Pay of 12.2%, 19.9%, and -33.6%, respectively. These findings are in line with our previous results and confirm our main hypothesis (H1a) that female executive directors earn less than their male counterparts. They also confirm our hypothesis (H2a) that the composition of male and female managers compensation contracts is different.

With respect to our hypothesis (H2b), we find that the compensation awarded to female executive directors is not significantly less performance sensitive than the one awarded to male executive directors: while the regression confirms our earlier findings on ROA and Q, the female-interacted performance variables remain insignificant. The other variables remain essentially unaffected compared to our main model.

Table 5-6 presents the corresponding results for CEOs. The analysis is based on 4,529 CEO observations and yields an R2 of about 0.296. As before in the case of executives, we perform the same regression also on base salary, bonus, long-term incentive pay, and the ratio of short-term versus long-term pay yielding an R2 of 0.525, 0.192, 0.137, and 0.042, respectively. Again, we adjust for year-fixed effects as well as industry-fixed effects and allow for intra-group correlation, by clustering the standard errors at the position level.

[Insert Table 5-6, about here]

Female CEOs are discriminated against in compensation: a female CEO can expect to earn a 15.7% lower total compensation than her male counterpart. This is again somewhat lower than indicated by the results of our treatment effect estimation. Similarly, the Base Salary, Bonus, and LT-Pay of female executives is reduced by 8.2%, 29.1%, and 16.8%, respectively. These results are again in line with our main hypotheses (H1a) that female managers earn less than male managers, and (H2a) that the composition of male and female managers compensation contract is different.

Surprisingly, the compensation of female CEOs is more performance sensitive than that of male CEOs: we observe that the interaction terms Female*Return on Assets and Female*Tobin's Q on total compensation yield coefficients of 0.011 and 0.005, respectively. Considering the Bonus of female CEOs, we observe that it is equally performance-sensitive (0.018) than that of males in terms of ROA, but in addition to this, we also find a positive

relation to Tobin's Q with a coefficient of 0.036. As for female CEO's LT-Pay, we observe coefficients for ROA of 0.002 and for Tobin's Q of 0.041, while for male CEOs' LT-Pay, the coefficients are 0.005 and 0.034, respectively. These results are all statistically significant at the 5% or the 1%-level. This adds an interesting twist to our results, while we observe that the pay-for-performance sensitivity of female executives is lower than that of male executives, we find that the situation is reversed for CEOs: The compensation of female CEOs is more performance-sensitive than that of their male counterparts. This result is contradictory to our hypothesis (H2b). As for the remaining variables, the results are virtually unaffected when compared to our main regression on CEOs.

Tobit Regression on the Effect of Female Non-Executive Directors

We also investigate whether the discrimination of females is less if there are female non-executive directors on the board. Likewise, we examine whether the contract structure (and performance sensitivity) is different in this case. For this purpose, we run both: i) a Tobit regression with our main model, and ii) a Tobit regression with female-interacted performance variables on a restricted sample of 3,986 executives and 1,061 CEOs, as we only focus on those firms that had at least one female non-executive director on the board in the previous year. As before, we consider year-fixed effects and industry fixed-effects and allow for intra-group correlation, by clustering the standard errors at the position level.

[Insert Table 5-7, about here]

Our main model shows that female executives are discriminated in total compensation: on average, they receive total compensation that is about 10.9% lower. In contrast, a female CEO receives a 20.2% higher total compensation in the event that at least one female non-executive director was present on the board in the previous year. When comparing this to our previous results of the Tobit regression on ln(total compensation), we immediately recognize that in the case of executives the discrimination is on average reduced by about 6.4%. In the case of top managers, we now find that total compensation is about 28.6% higher, i.e. this relates to an increase in total compensation of 20.2% instead of a decrease in total compensation of -8.4%.

Importantly, the addition of our female-performance interaction terms in our second model, leads to an insignificant female dummy for executives. In other words, we do not observe discrimination of female executives in the presence of at least one female non-executive director on the board, when we control for female-interacted performance.

When adjusting for female-interacted performance in the case of CEOs, we still observe positive discrimination for female CEOs: the coefficient of our Female variable is 0.019 and statistically significant at the 1%-level. In other words, a female CEO can expect to earn total compensation that is increased by roughly 2% when compared to a male CEO with similar characteristics. These findings are in line with our hypothesis (H3a) that the presence of female non-executive directors leads to a higher pay for females.

In this second model on CEOs, the interaction terms between Female and our performance variables are significant: the coefficients for Female*Return on Assets and Female*Tobin's Q are 0.018 and 0.020, respectively. Once more, the pay-for-performance sensitivity for female CEOs is higher than for their male counterparts. All coefficients are again significant at the 1%-level. When compared to the situation of male CEOs, we still observe that total compensation to female CEOs is more performance sensitive with respect to ROA and Q. This finding is again consistent with our hypothesis (H2b).

As for our positions and when comparing with the situation of an Executive Chairman, we find that both Total Compensation and Bonus of a CEO is approximately 25% higher, while both compensation measures for a Commercial Director indicate a roughly 19.9%-22.3% lower level of compensation. Both results are statistically significant at the 1% and the 5% level.

Director Age is still negatively and significantly related to Total Pay. This result is roughly in line with the findings on employees in various countries as presented by Simons (2011). We observe coefficients of -0.016 for executives and of -0.004 for CEOs. All coefficients are statistically significant at the 1%-level.

Boardsize and the percentage of non-executive directors on the board are positively associated with total compensation. The coefficients of boardsize for Executives and CEOs are 0.020 and 0.048. Likewise, the coefficients of the percentage of non-executive directors on the board for Executives and CEOs are 0.010 and 0.009, respectively. All coefficients are significant at the 1% level. Also the presence of a nomination committee is positively related

to total compensation: we observe coefficients of 0.356 for Executives and of 0.272 for CEOs. The presence of a remuneration committee is associated with a 19.6% decrease in CEO total compensation. The advice of a Top 4 Remuneration consultant is related to an increase of roughly 11% for both executives and CEOs.

Our performance variables suggest a somewhat stronger pay-for-performance sensitivity than in the main model (cf. Table 5-3 and Table 5-4). The coefficients of ROA for Executives and CEOs are roughly 0.010 and 0.012. All coefficients are statistically significant at the 1%-level. We also observe a weakly significant and positive coefficient (0.008) of Tobin's Q on Executives, when adding female-interacted performance variables.

The coefficients of both our ownership variables and our firm characteristics are comparable in direction, size, and significance with the results of our main model. In the case of Executives, we find Executive Ownership not to play a role. Instead, we find Pension Fund Ownership to be negatively related to total compensation with a coefficient of -0.016. In the case of CEOs, we observe that CEO Ownership looses significance, while Industrial Ownership gains significance: we observe a coefficient of -0.002 that is statistically significant at the 1%-level.

Likewise, the coefficients for Free Cash Flow/Assets and FTSE Small Cap loose significance in the case of executives. Therefore, we observe a gain in significance for Sales Growth, Leverage, and FTSE Small Cap in the case of CEOs with coefficients of -0.109, 0.077, and -0.046. All coefficients are significant at the 5% or the 1% level.

Tobit Regression on the Effect of Industrial Segregation

Is the gender pay gap greater in industries that employ a relatively high proportion of male managers? To address this question, we restrict our sample to those industries with the largest employment of males. This way, we investigate whether industrial segregation matters for the gender pay gap. To determine the industries with the largest employment of males, we divide our number of male observations per industry by the total number of male observations. The largest industries of male employment are the IT (22.62%), Food (17%), and Financial Services (10.86) sector: together they account for roughly 50.5% of all our male observations. Our sub-sample analysis is based on 8,158 executives and 2,367 CEO observations, and yields

an R2 of about 0.199 and 0.315, respectively. We correct for industry-fixed effects and year-fixed effects and cluster standard errors at the position level. The details are given in Table 5-8.

[Insert Table 5-8, about here]

A female executive employed in an industry with a high proportion of male managers gets on average a 6.7% lower total remuneration. Our analysis shows that the female variable for executives has a coefficient of -0.067 at the 1%-level of significance. This is a considerable smaller pay gap than what we observe in our main model. When considering the CEOs, we find that female CEOs receive on average a 7.4% higher total compensation. These results are contradictory to our hypothesis (H1b) that the gender wage gap is higher in industries with a high concentration of male managers. With respect to all the results for the remaining variables, we observe that they are largely comparable in size, direction, and significance to the results of our main models on Executives (excl. CEOs) and on CEOs.

Tobit Regression on Female-Interacted Governance Variables

Do we observe that the gender pay gap is smaller in firms with better internal and external corporate governance mechanisms? We expand our main model with interactions between our Female dummy and various governance characteristics to examine the female-specific governance effects. As before, we estimate i) our main model, and ii) our main model plus female-interacted performance variables. The analysis is based on 15,381 executive- and 4,529 CEO observations and yields an R2 of 0.187 and 0.299, respectively.

[Insert Table 5-9, about here]

When correcting for female-interacted governance variables, the pay gap for females is indeed lower: the dummy variable Female is insignificant for Executives and is positively and significantly associated with the level of total remuneration for CEOs. The coefficients of Female in the case of CEOs are 1.147 (Model 1) and -0.970 (Model 2) – both are statistically significant at the 1%-level. This is in line with our hypothesis (**H3b**) that the pay gap is smaller in better governance.

Likewise, we find positive and highly significant (at the 1%-level) coefficients of 0.003 and 0.040 for the interaction between our female dummy and Return on Assets and Tobin's Q,

respectively. Interestingly, we observe that a female CEO's total compensation is more performance sensitive to Tobin's Q than to ROA.

Many of the female-interacted governance characteristics become significant: Female*Boardsize is negatively related to total compensation for both Executives and CEOs. In other words, a larger board awards a lower total compensation to female top managers. The interaction term Female*Non-executive Directors (%) is significant for CEOs, only: we observe a coefficient of -0.019, indicating that a 10% increase in non-executive ownership is related to a 19% decrease in total compensation of female CEOs.

Notably, the percentage of females on the board is positively related to the level of total compensation for executives, but negatively to the level of total compensation for CEOs. The observed coefficients are 0.016 and -0.003, respectively.

The presence of a Nomination Committee and the advice of a Top 4 Remuneration Consultant are positively related to the level of total compensation for CEOs. The coefficients are in the range of 0.475-0.519 and 0.475-0.501, respectively. The presence of a Top 4 Remuneration consultant is negatively associated with the level of total compensation for executives, however. In this case, we find a coefficient of roughly -0.119. The level of firm risk is only negatively and significantly associated with total compensation for CEOs. The observed coefficients are -0.224 and -0.227, respectively. All coefficients are significant at the 1%-level.

With respect to all the results for the remaining variables, we observe that they are largely comparable in size, direction, and significance to the results of our main models on Executives (excl. CEOs) and on CEOs.

Tobit Regression on the Effect of Compensation Consultants

Do remuneration consultants reduce the gender wage gap?

[Insert Table 5-10, about here]

Panel A of Table 5-10 shows that female Executives and female CEOs can expect to receive a total remuneration that is lower by about 11.8% and 27.8%, respectively. These findings are roughly in line with the results of our main model.

The interaction terms female-performance are positive and significant for CEOs: 0.007 for Female*ROA) and 0.029 for Female*Tobin's Q (all significant at the 1%-level). In addition, the female-interacted presence of a Top 4 Remuneration Consultant is significantly and negatively associated with total remuneration for female executives. The coefficients are about -0.119 and are significant at the 5%-level. Likewise, our estimation shows coefficients for Female*Top 4 Remun Consultant in the range of 0.516-0.539 for CEOs that are all significant at the 1%-level. In other words, the advice of a Top 4 remuneration consultant seems to exacerbate the level of discrimination for executives (excluding top managers). At the same time, the presence of a Top 4 remuneration consultant seems to be highly beneficial for the level of total compensation of a female top manager: a female top manager can expect an increase of about 50% due to the presence of a Top 4 remuneration consultant.

In sum, these results provide mixed evidence for our hypothesis (H4) that Top 4 remuneration consultants reduce the pay gap: while we find this to be true for top managers, the situation for executives seems to be exacerbated.

Our general performance measures, governance measures, firm characteristics, and ownership variables remain virtually unaffected when compared to the results of our main model. While the coefficients of our position variables in the case of executives are also comparable, they drop in the case of top managers due to the low number of observations. As for the results of Panel B, we again find the coefficients of virtually all variables to be comparable with those of Panel A, although we now get results for our position variables and female-interacted position variables that are again close to the results of our main regression.

5.5.4 Robustness Checks

We performed extensive robustness checks to validate our results. We discuss the results but do not report the associated tables for the sake of brevity.

Matching with Replacement

Matching with replacement usually leads to a minimization of the distance between the propensity scores of the treated and the untreated, which typically results in a lower bias. However, the disadvantages of matching with replacement are that the precision is typically lower than in the case of matching without replacement and that the final sample consists of

duplicate observations of the same match, which can be difficult to deal with in respect of further analysis. A re-estimation of the treatment effect based on matching with replacement yields results that are qualitatively unaffected.

Increasing the Number of Comparables

In a second step, we not only employed 1-on-1 matching, but also relied on 1-on-3 matching, i.e. we compared the pay outcome of a female executive director to the average outcome of the 3 closest males matches. Matching with a higher number of comparables offers the advantage of taking the information of more observations into account yielding a higher precision, but at the trade-off of some bias. Again, the results of our treatment effect estimation are similar.

Focusing on Newly Hired Executives

In our current sample, we include all director observations independent of whether they have been hired recently or whether they have a high tenure in their firm. We rerun our main Tobit model on the subsample of newly hired executive directors and our results remain largely unaffected.

5.6 Conclusion and Discussion

> "*While CMI is delighted that junior female executives have caught up with males at the same level, this year's Salary Survey demonstrates, yet again, that businesses are contributing to the persistent pay gap and alienating top female employees by continuing to pay men and women unequally.*" (CMI, Petra Wilton, 31/08/2011)

The existence of the gender wage gap and the possible causes thereof remains to be an important and hotly debated topic. The literature proposes an impressive range of theories that may help to explain the existence of a gender wage gap, such as the 'sticky floors' idea (Booth et al., 2003), the 'glass-ceiling' concept (e.g. Arulampalam et al., 2005), occupational and industrial segregation (e.g. Blau and Kahn, 1994, Allen and Sander, 2002), the impact of corporate performance (Kulich et al., 2009), and of behavioral biases (e.g. Eagly et al., 1992, Eagly and Karau, 2002, Kulich et al., 2009), and the effect of pay consultants (e.g. Bender,

2003, Cadman et al., 2010). Nevertheless, empirical proof for these theories remains scarce, which is due to the low number of female top managers.

For this paper, we dispose of a very large dataset that includes details on the compensation of male and female executive directors for virtually all companies listed in the UK over the years 1996 to 2007. This enables us to put many of the above-mentioned ideas on the gender pay gap to the test. In particular, we ask whether we find that companies discriminate females at the level of executive director, whether such a difference is attributable to occupation and segregation, pay-for-performance sensitivity, behavioral biases, corporate governance structure, and the influence of remuneration consultants.

From a univariate analysis of the data, we find that total compensation of female executives is lower than that of male executives, but we fail to identify a significant difference in total compensation of male and female CEOs. In order to investigate this effect deeper, we use a treatment effect estimation to compare the average pay e.g. in total compensation of females, under gender-based treatment ('discrimination') to the average pay outcome of males ('controls'). The advantage of a treatment effect estimation over and above a simple OLS regression is that we do not assume a linear relationship between our independent variables and the level of pay, but instead we do account for heterogeneity among individuals. We control for firm size, director's age and tenure, position, industry, and year. The results of the treatment effect analysis confirm that female executive directors (but not the CEOs) are discriminated against in their base salary, bonus, long-term incentive compensation, and hence also in the total level of compensation. For example, female executives can expect to receive on average a 22% lower bonus, which is equal to a reduction of about £25,604, which is in line with the findings reported by Kulich et al. (2009). We also identify a reduction in total compensation to female executives of 13.4%, which is equal to an amount of roughly £269,000 a year. These results confirm our main hypothesis that female directors earn less than their male counterparts. Remarkably, this gender-based discrimination seems to be largely restricted to executive directors. We do not find that the components of pay significantly differ between male and female CEOs, although we find weak evidence that the level of total compensation of female CEOs is lower. These results suggest indeed that gender equality in terms of pay at the top corporate level has been (nearly) achieved, but it also suggests that female executive directors at the sub-top level continue to be discriminated. The reason for the discrimination at

the executive director level but not at the CEO level is that executive directors are less visible as they are not the figureheads of the corporation.

When considering the various components of pay, our findings indicate that the lower total compensation awarded to female executives can be traced back to a lower base salary, a lower bonus, and a lower level of incentive pay, while the ratio of short-term versus long-term pay remains unchanged. As for the CEOs, we find a comparably lower reduction in total compensation that can largely be attributed to differences in base salary.

What can we tell about the impact of confounding factors, e.g. industrial segregation, riskiness, and the governance structure) on the gender wage gap? The treatment effect and Tobit regressions confirm that female executives experience a significant discount (of up to 17%) in total compensation relative to male executives. When examining industries with a high concentration of male executives, however, we observe contrary to our expectations that the gender wage gap is not greater, thus it contradicts the idea that work done by women is less valued in society as suggested by Allen and Sander (2002).

While we do not find sufficient proof that total compensation for female executives (excl. CEOs) is less performance-sensitive than that of their male counterparts, we do find this to be the case with respect to long-term compensation. By splitting up the effects for executives and top managers, we are able to show that total compensation for female top managers is more performance sensitive than for male top managers. Notably, however, we show that the contracts of female CEOs are more sensitive to accounting and market performance, which contradicts the findings of Kulich et al. (2009). Hence, we find mixed results concerning our hypothesis that the pay-for-performance sensitivity of female executives is lower.

Can female non-executive directors on the board improve the situation for females? Our analysis shows that the discrimination of female executives is indeed reduced, in the presence of at least one female non-executive director on the board. Our finding suggests that a minimum ratio of women on the board may be necessary to tackle gender-based discrimination (cf. Niederle, Segal, and Vesterlund, 2008). However, the introduction of female quotas may

lead to less capable boards and a reduction of shareholder value and may also have adverse affects on the situation of women (Ahern and Dittmar, 2012).[157]

We can only provide mixed results with respect to our hypothesis that a better state functioning of internal corporate governance mechanisms contributes to a reduction of the pay gap. A better internal governance leads to lower gender-based discrimination for executives, but at the same time it increases the level of discrimination for executive directors.

Lastly, we document that the advice of Top 4 remuneration consultants is beneficial for female CEO – in that it reduces the pay gap, but exacerbates the situation for female executive directors. In other words, we present mixed evidence regarding the impact of top 4 remuneration consultants on the pay gap.

An interesting avenue for further research would be to examine some of the following, remaining issues: Are the remaining differences in pay between males and females due to the fact that a new and better educated cohort of women has not yet made it to the top? Are women distracted from pursuing their career due to their choice of being a mother? Lastly, to what extent do differences in the ability to negotiate account for the remaining differences in pay between males and females?

[157] See also: Yasmine Chinwala, 'Women in Finance Are Cold on Quotas', 11th June 2012, The Wall Street Journal.

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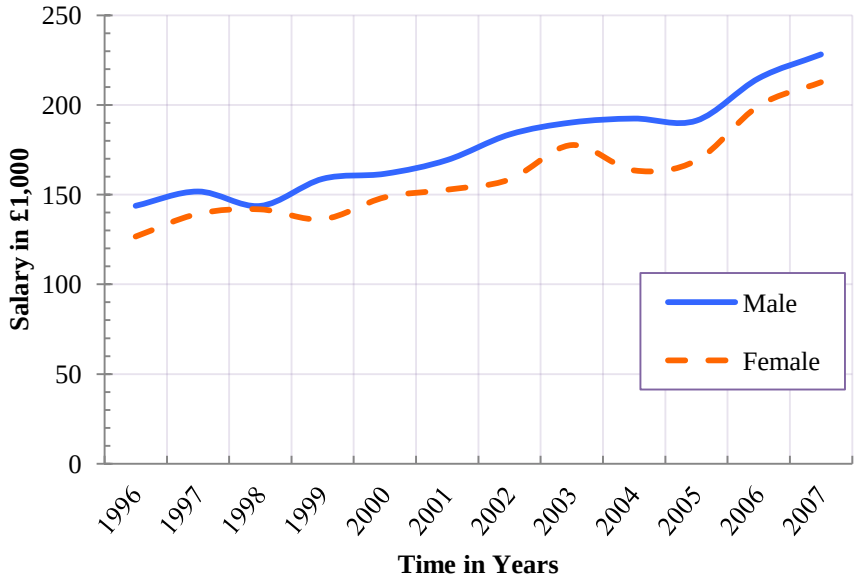
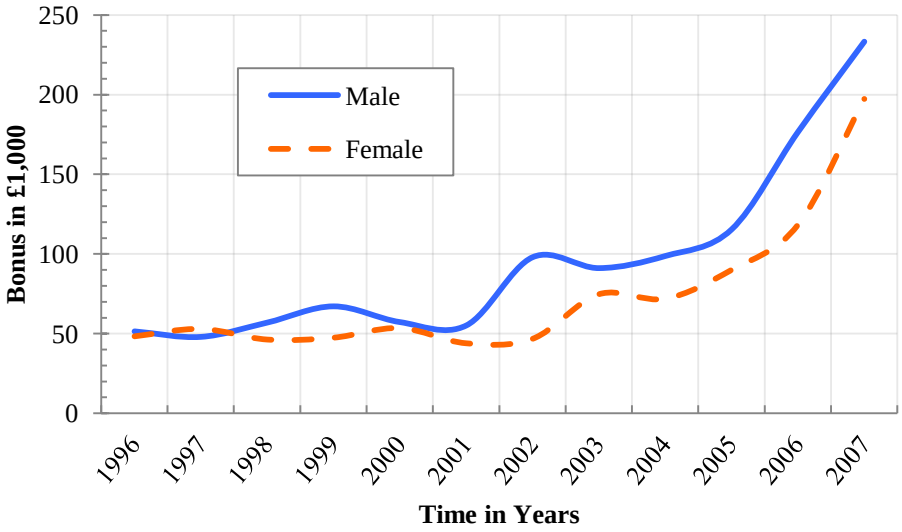
Figure 5-1 All Executives: Average Salary Development.



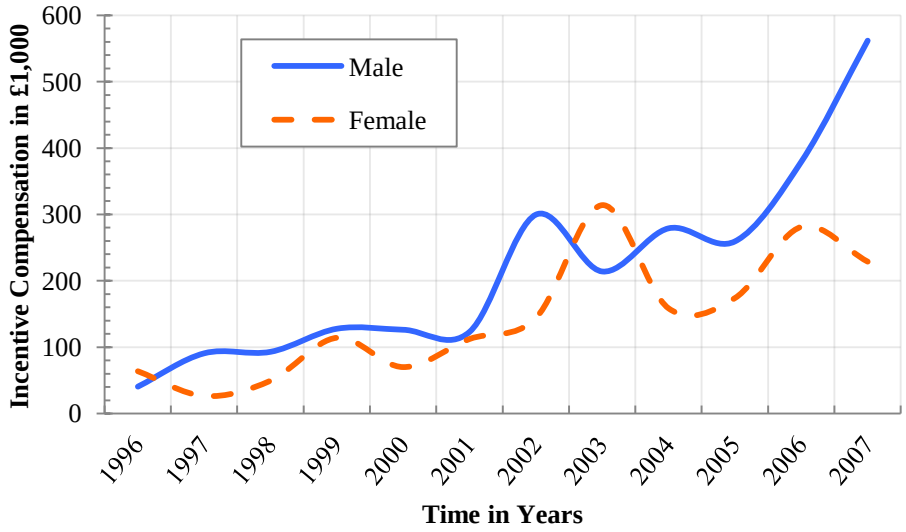
The figure shows the development of mean salary over time for both males and females. The data is based on the sample of executive directors. Average salary is measured in £1,000. Source: Boardex, Datastream, and Manifest.

Figure 5-2 All Executives: Average Bonus Development.



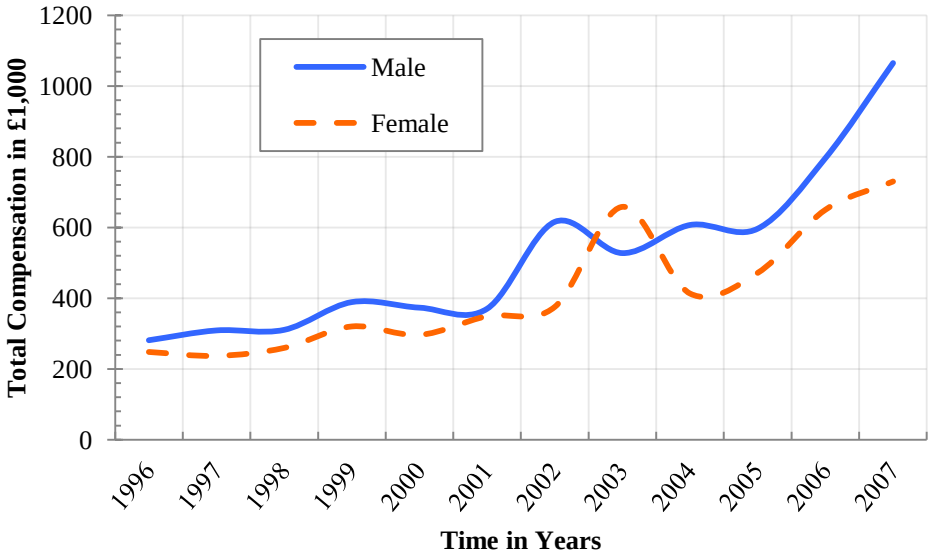
The figure shows the development of mean bonus over time for both males and females. The data is based on the sample of executive directors. Average bonus is measured in £1,000. Source: Boardex, Datastream, and Manifest.

Figure 5-3 All Executives: Average Long-Term Compensation Development.



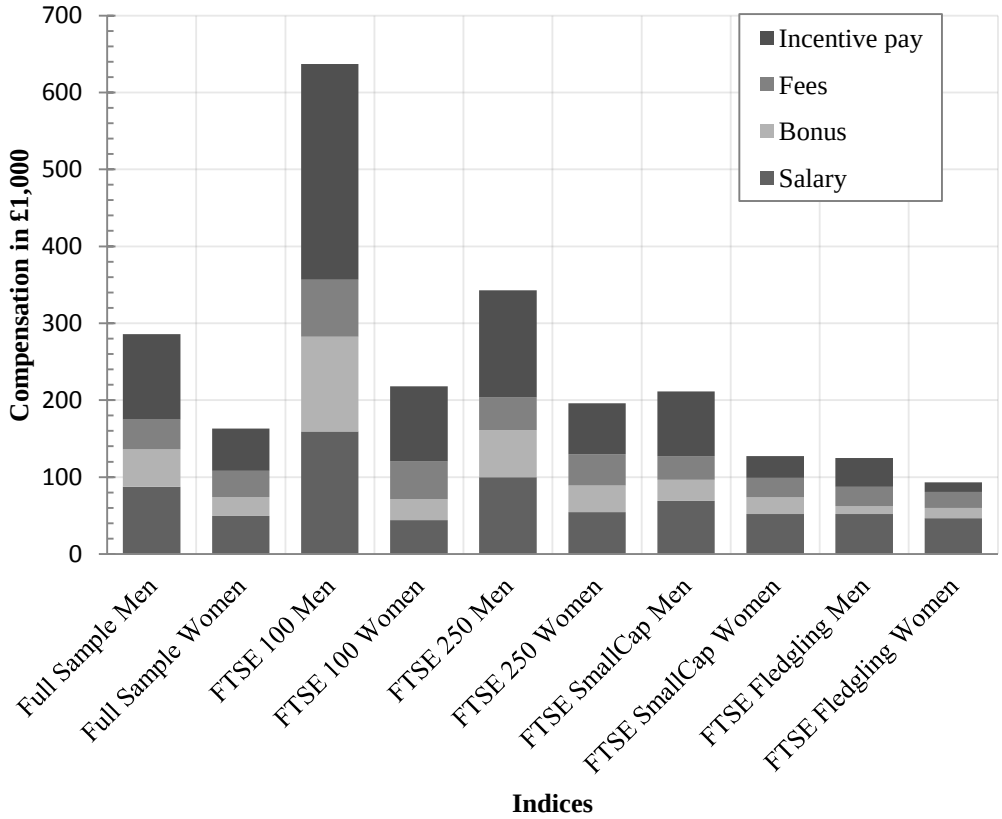
The figure shows the development of mean incentive compensation over time for both males and females. Long-Term incentive compensation is calculated as the sum of the Black-Scholes value of stock options and the total value of LTIPs. The data is based on the sample of executive directors. Average incentive compensation is measured in £1,000. Source: Boardex, Datastream, and Manifest.

Figure 5-4 All Executives: Average Total Compensation.



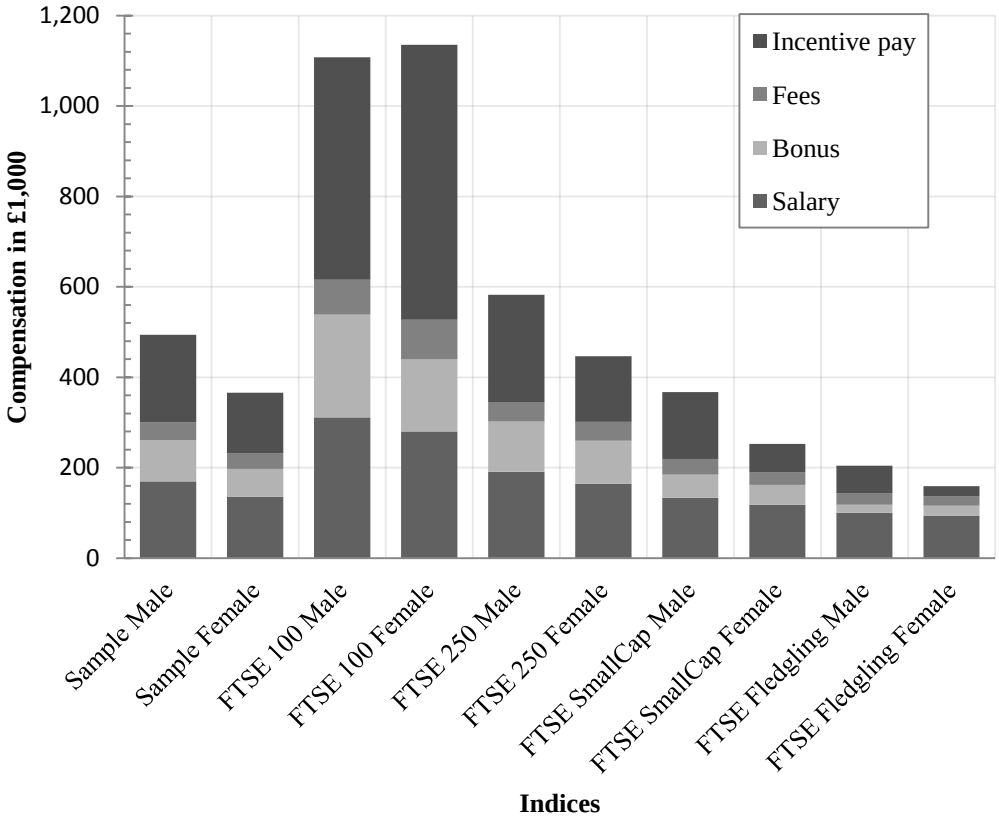
The figure shows the development of mean total compensation over time for both males and females. The data is based on the sample of executive directors. Average total compensation is measured in £1,000. Source: Boardex, Datastream, and Manifest.

Figure 5-5 Full Sample: Average Gender Pay Gap by Corporate Size (Index).



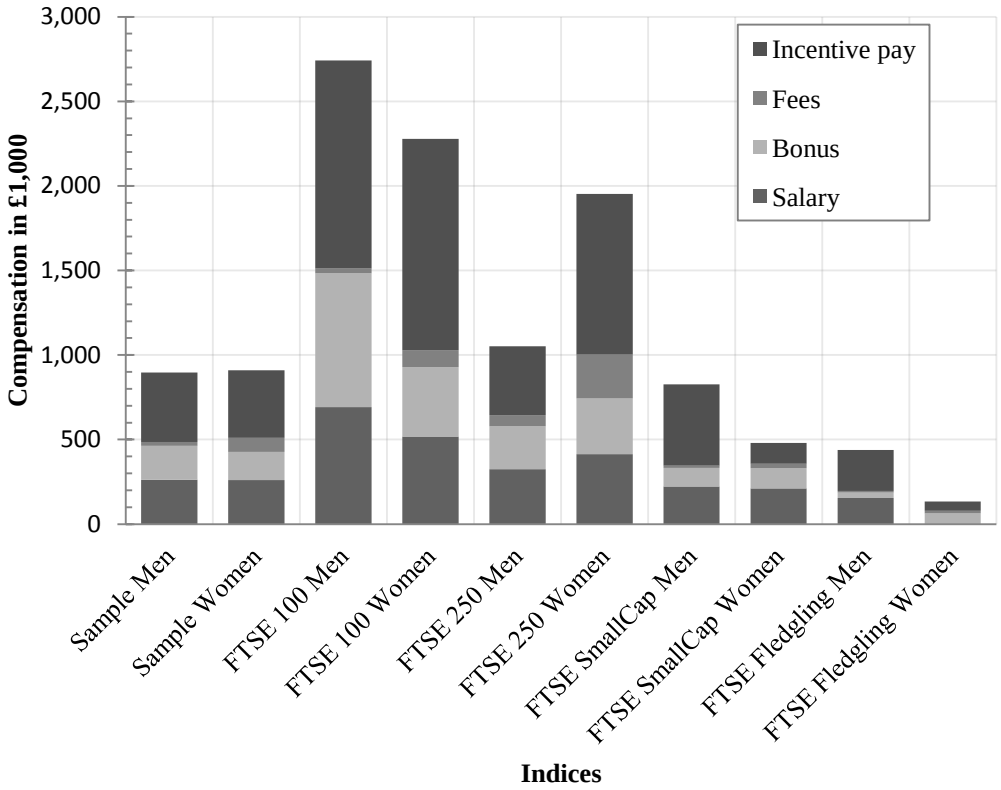
The figure shows the mean gender gap for the full sample and all indices (FTSE 100, FTSE 250, FTSE Small Cap, FTSE Fledgling), by contrasting the level of total compensation for men and women. It also gives the level of the various pay components (Salary, Bonus, Fees, Long-Term Incentive Pay). The data is based on the full sample. Each compensation component is measured in £1,000. Source: Boardex, Datastream, and Manifest.

Figure 5-6 Executives Sample (excl. CEOs): Average Gender Pay Gap by Indices.



The figure shows the mean gender gap for the full Executives sample (excl. CEOs) and by all indices (FTSE 100, FTSE 250, FTSE Small Cap, FTSE Fledgling), by contrasting the level of total compensation for men and women. It also gives the level of the various pay components (Salary, Bonus, Fees, Incentive Pay). The data is based on the Executives sample. Each compensation component is measured in £1,000. Source: Boardex , Datastream, and Manifest.

Figure 5-7 CEO Sample: Average Gender Pay Gap by Corporate Size (Index).



The figure shows the mean gender gap for the full CEO sample (incl. equivalents) and by all indices (FTSE 100, FTSE 250, FTSE Small Cap, FTSE Fledgling), by contrasting the level of total compensation for men and women. It also gives the level of the various pay components (Salary, Bonus, Fees, Long-Term Incentive Pay). The data is based on the CEO sample. Each compensation component is measured in £1,000. Source: Boardex, Datastream, and Manifest.

Table 5-1 Univariate Statistics of the Main Variables.
The table shows the mean and standard deviation (S.D.) of our main variables for the sample of executives (excl. CEOs) and the CEO sample. It also presents the means for all male and female observations in both samples as well as the results of a t-test on the differences in their means: the significance of the results at the 10%, 5%, or 1% level are denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Executives (excl. CEOs)		CEOs	
	Male	Female	Male	Female
Female Presence				
Female	0.00	1.00	0.00	1.00
Positions				
CEO	0.06	0.04***		
Executive Chairman	0.08	0.01***		
Finance Director	0.78	0.85***		
Commercial Director	0.01	0.02***		
COO	0.04	0.05		
Other Executives	0.03	0.02**		
Remuneration				
Total Compensation (in £1,000)	418.65	391.59**	800.11	865.01
Base Salary (in £1,000)	161.99	146.39***	242.73	251.02
Bonus (in £1,000)	73.86	65.15***	145.26	159.12
LT-Pay (in £1,000)	148.35	143.99	370.94	371.41
ln(ST-Pay/LT-Pay)	0.68	0.80**	0.52	0.54
Director Characteristics				
Director Age	49.59	45.00***	52.92	47.64***
Director Tenure	5.28	4.23***	5.79	4.19***
Governance				
Boardsize	9.06	9.52***		
Non-Executive Directors (%)	48.12	48.67***		
Female Directors (%)	0.00	18.71***		
Audit Committee Presence	0.99	1.00**		
Nomination Committee Presence	0.77	0.72***		
Remuneration Committee Presence	1.00	0.98***		
Top 4 Remun Consultant Advice	0.33	0.34***		
CEO/Chairman Duality	0.00	0.00		
Firm Risk	0.30	0.31		
Performance				
Return on Assets (Median)	4.20	3.07***		
Tobin's Q (Median)	2.01	1.84		
Ownership				
CEO Ownership	3.09	2.84		
Executive Ownership (excl. CEO)	3.40	4.08***		
Non-Executive Ownership	2.13	2.68***		
Industrial Ownership	7.41	8.04***		
Pension Fund Ownership	0.34	0.29		
Individual & Families Ownership	2.21	2.48***		
Institutional Ownership	20.20	20.06		
Firm Characteristics				
Free Cash Flow/Assets*	0.06	0.05***		
Sales Growth*	0.14	0.13		
Leverage*	0.59	0.54***		
FTSE100	0.09	0.11***		
FTSE250	0.31	0.25***		
FTSE Small Cap	0.36	0.37***		
Number of Observations	32,396	1,286	11,793	218

Table 5-2 Treatment Effect Estimation on Various Pay Components.
This table presents the results of a treatment effect estimation on various pay components: Base Salary, ln(Base Salary), Base Salary/Total Compensation, Bonus, ln(Bonus), Bonus/Total Compensation, Bonus/Base Salary, Incentive Compensation (the sum of stock options and LTIPs), Total Compensation, ln(Total Compensation), and Total Compensation/Base Salary. The analysis is based on both the executives (excl. CEOs), and the CEO sample. The table shows the coefficients and the p-values. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The treatment effect is the variable Female, which is equal to one in the case of a female executive director. The data are extracted from Boardex, Datastream, and Manifest.

	Executives (excl. CEOs) (1)		CEOs (2)	
Dependent variable:	Coef.	p-value	Coef.	p-value
Base Salary	-19.947***	0.000	-21.168	0.246
	(4.530)		(18.252)	
Ln(Base Salary)	-0.164***	0.000	-0.099	0.215
	(0.032)		(0.080)	
Base Salary/Total Compensation	1.016	0.372	2.938	0.334
	(1.150)		(3.038)	
Bonus	-25.604***	0.009	-35.434	0.290
	(9.756)		(33.517)	
Ln(Bonus)	-.220***	0.000	0.065	0.705
	(0.063)		(0.172)	
Bonus/Total Compensation	-0.028	0.970	-2.551	0.149
	(0.722)		(1.766)	
Bonus/Base Salary	-7.022	0.359	-45.566	0.133
	(7.662)		(30.297)	
Incentive Compensation	-222.043***	0.000	-32.639	0.900
	(51.426)		(214.756)	
Ln(Incentive Compensation)	-0.568***	0.000	0.139	0.775
	(0.162)		(0.485)	
Incentive Compensation/Total Compensation	-0.956	0.326	0.126	0.966
	(0.973)		(2.968)	
Total Compensation	-269.069***	0.000	116.319	0.669
	(53.748)		(272.314)	
Ln(Total Compensation)	-0.134***	0.004	-0.258*	0.055
	(0.046)		(0.134)	
Total Compensation/Base Salary	-46.998	0.886	-119.679	0.971
	(112.969)		(988.955)	

Table 5-3 Compensation of Executive Directors (excl. CEOs)

This table presents the results of a Tobit regression on various compensation measures for executive directors (excl. CEOs). The position dummies are aggregations and thus include similar positions (e.g. 'deputy CEO' in the CEO position). The independent variables are (the logarithm of) Total Pay, Base Salary, Bonus, Long-Term Pay (LT-Pay), and Short-term over Long-term Pay (ST/LT-Pay). LT-Pay is defined as the sum of the Black Scholes value of stock options and total LTIPs. ST-Pay is defined as the sum of Base Salary and Bonus. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Total Pay	Base Salary	Bonus	LT-Pay	ST/LT-Pay
	Coef.	Coef.	Coef.	Coef.	Coef.
Constant	4.791***	5.065***	4.602***	3.211***	2.277**
Female Presence					
Female	-0.173***	-0.123***	-0.240***	-0.327***	0.251
Positions					
CEO	0.084***	-0.134**	-0.021	0.199	-0.163
Finance Director	-0.091***	-0.218***	-0.297***	-0.246***	0.079***
Commercial Director	-0.257***	-0.314***	-0.457***	-0.369***	0.089
COO	-0.016	-0.174**	-0.171	-0.212	0.218
Other Executives	-0.183	-0.215**	-0.192**	-0.098	-0.162
Director Characteristics					
Director Age	-0.011***	-0.004***	-0.001	-0.007***	0.008***
Director Tenure	0.002	0.002	0.003	0.004	-0.005
Governance					
Boardsize	0.027***	0.013***	0.031***	0.048***	-0.037***
Non-Executive Directors (%)	0.010***	0.005***	0.011***	0.014***	-0.007***
Female Directors (%)	0.002**	0.001**	0.003	0.006**	-0.004
Audit Committee Presence	-0.521***	-0.497***	-0.847***	0.488**	-1.099***
Nomination Committee Presence	0.214***	0.148***	0.105	0.193***	-0.024
Remuneration Committee Presence	0.659	0.153	-0.908**	-0.233	0.301
Top 4 Remun Consultant Advice	0.136***	0.070***	0.124***	0.133***	-0.075
CEO/Chairman Duality	-0.012	0.411***	0.238***	-0.899***	1.436***
Firm Risk	0.056***	0.047**	0.024	0.118***	-0.212***
Performance					
Return on Assets	0.008***		0.016***	0.006*	-0.003
Tobin's Q	-0.002		0.008	0.037***	-0.049***
Ownership					
CEO Ownership	-0.001	0.001	-0.002	0.006	-0.011*
Executive Ownership (excl. CEO)	-0.004***	-0.002*	-0.001	-0.007***	0.006***
Non-Executive Ownership	-0.012***	-0.009***	-0.009***	-0.011***	0.001
Industrial Ownership	-0.002***	-0.002***	0	-0.004***	0.002
Pension Fund Ownership	0.001	0.001	-0.033***	0.012	-0.024**
Individual & Families Ownership	-0.005***	-0.003***	0.001	-0.012***	0.012***
Institutional Ownership	-0.001	-0.001***	0.001	-0.002***	0.002*
Firm Characteristics					
Free Cash Flow/Assets*	-0.256*	0.304***	-0.465***	-1.167***	1.604***
Sales Growth*	0.042***	-0.005	0.171***	0.024	0.228*
Leverage*	0.065***	0.046***	0.024*	-0.006	0.027
FTSE100	1.022***	0.666***	1.068***	1.023***	-0.422***
FTSE250	0.486***	0.320***	0.489***	0.485***	-0.220***
FTSE Small Cap	0.088***	0.051***	0.02	0.012	-0.004
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.186	0.194	0.165	0.137	0.052
Number of Observations	15381	15244	10225	7448	7405

Table 5-4 Compensation of CEOs.

This table presents the results of a Tobit regression on various compensation measures for CEOs (incl. CEO equivalents). The position dummies are aggregations and thus include similar positions. The independent variables are (the logarithm of) Total Pay, Base Salary, Bonus, Long-Term Pay (LT-Pay), and Short-term over Long-Term Pay (ST/LT-Pay). LT-Pay is defined as the sum of the Black Scholes value of stock options and total LTIPs. ST-Pay is defined as the sum of Base Salary and Bonus. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Total Pay	Base Salary	Bonus	LT-Pay	ST/LT-Pay
	Coef.	Coef.	Coef.	Coef.	Coef.
Constant	2.871***	4.144***	5.025***	2.432***	1.315**
Female Presence					
Female	-0.084***	-0.082***	-0.03	0.003	-0.085
Positions					
CEO	0.174	0.416**	0.04	0.229	0.274
Director Characteristics					
Director Age	-0.002	0.006***	0.002	-0.005***	0.017***
Director Tenure	-0.001	0.002	0.003	-0.007***	0.017***
Governance					
Boardsize	0.050***	0.034***	0.052***	0.054***	-0.018***
Non-Executive Directors (%)	0.010***	0.004***	0.010***	0.013***	-0.008***
Female Directors (%)	0.003***	0.004***	0.002***	0.006***	-0.002
Audit Committee Presence	0.003	0.085	-0.935***	1.324***	-0.650***
Nomination Committee Presence	0.217***	0.144***	0.055	0.228***	-0.261***
Remuneration Committee Presence	1.656	-0.320***	-1.319***	-0.560***	0.088
Top 4 Remun Consultant Advice	0.148***	0.075***	0.112***	0.112***	-0.037
CEO/Chairman Duality	0.033*	0.037***	0.240***	0.290***	-0.550***
Firm Risk	0.093***	0.038**	0.089***	0.004	0.048***
Performance					
Return on Assets	0.010***		0.018***	0.005***	0.001
Tobin's Q	0.000		0.007	0.035***	-0.033***
Ownership					
CEO Ownership	-0.006**	-0.002*	-0.005	-0.005**	0.004
Executive Ownership (excl. CEO)	-0.006***	-0.004***	-0.008***	-0.005***	-0.005
Non-Executive Ownership	-0.007***	-0.004***	-0.006***	-0.008	0.002
Industrial Ownership	0	0	0	-0.002***	0.004***
Pension Fund Ownership	-0.009	-0.004	-0.022	-0.010*	-0.007
Individual & Families Ownership	-0.006***	-0.003***	0	-0.005***	0.004*
Institutional Ownership	0.001	0	0.001***	-0.001	0.002**
Firm Characteristics					
Free Cash Flow/Assets*	-0.239**	0.199***	-0.262**	-0.302**	0.197
Sales Growth*	-0.02	-0.082***	0.184***	0.085**	-0.115
Leverage*	0.075***	0.065***	0.004	0.026***	-0.030**
FTSE100	1.190***	0.693***	1.242***	1.188***	-0.585***
FTSE250	0.551***	0.346***	0.569***	0.542***	-0.220***
FTSE Small Cap	0.117***	0.050**	0.157***	-0.051***	0.194***
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.296	0.521	0.192	0.137	0.041
Number of Observations	4529	4496	3321	2522	2503

Table 5-5 Performance Sensitivity of Executive Directors (excl. CEOs)
This table presents the results of a Tobit regression on various compensation measures for executive directors (excl. CEOs). The independent variables are (the logarithm of) Total Pay, Base Salary, Bonus, Long-Term Pay (LT-Pay), and Short-term over Long-Term Pay (ST/LT-Pay). The model includes interactions between Female and the performance variables (Return on Assets, Tobin's Q). LT-Pay is defined as the sum of the Black Scholes value of stock options and total LTIPs. ST-Pay is defined as the sum of Base Salary and Bonus. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Total Pay	Base Salary	Bonus	LT-Pay	ST/LT-Pay
	Coef.	Coef.	Coef.	Coef.	Coef.
Constant	4.784***	11.839***	4.591***	3.210***	2.277**
Female Presence					
Female	-0.126***	-0.122***	-0.199*	-0.336***	0.257
Female * Return on Assets	-0.002		-0.001	0.004	-0.002
Female * Tobin's Q	-0.014		-0.012	0.001	-0.001
Positions					
CEO	0.085***	-0.137**	-0.021	0.199	-0.163
Finance Director	-0.091***	-0.219***	-0.296***	-0.246***	0.079***
Commercial Director	-0.255***	-0.314***	-0.455***	-0.368***	0.088
COO	-0.016	-0.174**	-0.171	-0.212	0.218
Other Executives	-0.183	-0.215**	-0.192**	-0.098	-0.162
Director Characteristics					
Director Age	-0.011***	-0.004***	-0.001	-0.007***	0.008***
Director Tenure	0.002	0.002	0.003	0.004	-0.005
Governance					
Boardsize	0.027***	0.013***	0.031***	0.048***	-0.037***
Non-Executive Directors (%)	0.010***	0.005***	0.011***	0.014***	-0.007***
Female Directors (%)	0.002**	0.001**	0.003	0.006***	-0.004
Audit Committee Presence	-0.522***	-0.497***	-0.849***	0.487**	-1.098***
Nomination Committee Presence	0.214***	0.148***	0.105	0.194***	-0.024
Remuneration Committee Presence	0.664	0.153	-0.899**	-0.232	0.301
Top 4 Remun Consultant Advice	0.136***	0.070***	0.124***	0.133***	-0.075
CEO/Chairman Duality	-0.013	0.413***	0.237***	-0.900***	1.436***
Firm Risk	0.056***	0.046**	0.025	0.118**	-0.212***
Performance					
Return on Assets	0.008***		0.016***	0.006	-0.003
Tobin's Q	-0.001		0.008	0.037***	-0.049***
Ownership					
CEO Ownership	-0.001	0.001	-0.002	0.006	-0.011*
Executive Ownership (excl. CEO)	-0.004***	-0.002*	-0.001	-0.007***	0.006***
Non-Executive Ownership	-0.012***	-0.009***	-0.009***	-0.011***	0.001
Industrial Ownership	-0.002***	-0.002***	0	-0.004***	0.002
Pension Fund Ownership	0.001	0.001	-0.033***	0.012	-0.024**
Individual & Families Ownership	-0.005***	-0.003***	0.001	-0.012***	0.012***
Institutional Ownership	-0.001	-0.001***	0.001	-0.002***	0.002*
Firm Characteristics					
Free Cash Flow/Assets*	-0.255*	0.305***	-0.464***	-1.166***	1.603***
Sales Growth*	0.042***	-0.006	0.171***	0.025	0.228*
Leverage*	0.065***	0.046***	0.024*	-0.006	0.027
FTSE100	1.021***	0.666***	1.068***	1.023***	-0.423***
FTSE250	0.486***	0.320***	0.489***	0.485***	-0.220***
FTSE Small Cap	0.088***	0.050***	0.02	0.012	-0.004
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.186	0.197	0.165	0.137	0.052
Number of Observations	15381	15244	10225	7448	7405

Table 5-6 Performance Sensitivity of CEOs.

This table presents the results of a Tobit regression on various compensation measures for CEOs (incl. CEO equivalents). The independent variables are (the logarithm of) Total Pay, Base Salary, Bonus, Long-Term Pay (LT-Pay), and Short-term over Long-Term Pay (ST/LT-Pay). The model includes interactions between Female and the performance variables (Return on Assets, Tobin's Q). LT-Pay is defined as the sum of the Black Scholes value of stock options and total LTIPs. ST-Pay is defined as the sum of Base Salary and Bonus. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Total Compensa	Base Salary	Bonus	LT-Pay	ST/LT-Pay
	Coef.	Coef.	Coef.	Coef.	Coef.
Constant	2.876***	10.913***	5.041***	2.450***	0.83
Female Presence					
Female	-0.157***	-0.082***	-0.291***	-0.168**	0.022
Female * Return on Assets	0.011***		0.018***	0.002**	0.025***
Female * Tobin's Q	0.005**		0.036***	0.041***	-0.077***
Positions					
CEO	0.174	0.416**	0.036	0.228	0.273
Director Characteristics					
Director Age	-0.002	0.006***	0.002	-0.005***	0.018***
Director Tenure	-0.001	0.002	0.003	-0.007***	0.016***
Governance					
Boardsize	0.050***	0.034***	0.051***	0.054***	-0.018***
Non-Executive Directors (%)	0.010***	0.004***	0.010***	0.013***	-0.008***
Female Directors (%)	0.003***	0.004***	0.002***	0.006***	-0.002
Audit Committee Presence	0.004	0.085	-0.930***	1.317***	-0.650***
Nomination Committee Presence	0.218***	0.144***	0.058	0.233***	-0.268***
Remuneration Committee Presence	1.653	-0.320***	-1.321***	-0.561***	0.085
Top 4 Remun Consultant Advice	0.148***	0.075***	0.112***	0.112***	-0.037
CEO/Chairman Duality	0.033**	0.037***	0.241***	0.291***	-0.552***
Firm Risk	0.092***	0.038**	0.089***	0.002	0.048***
Performance					
Return on Assets	0.010***		0.018***	0.005***	0.001
Tobin's Q	-0.001		0.005	0.034***	-0.032***
Ownership					
CEO Ownership	-0.006**	-0.002*	-0.005	-0.005**	0.004
Executive Ownership (excl. CEO)	-0.006***	-0.004***	-0.008***	-0.005***	-0.005
Non-Executive Ownership	-0.007***	-0.004***	-0.006***	-0.008	0.002
Industrial Ownership	0	0	0	-0.002***	0.004***
Pension Fund Ownership	-0.009	-0.004	-0.022	-0.010*	-0.007
Individual & Families Ownership	-0.006***	-0.003***	0	-0.005***	0.004*
Institutional Ownership	0.001	0	0.001***	-0.001	0.002**
Firm Characteristics					
Free Cash Flow/Assets*	-0.237**	0.199***	-0.262**	-0.309**	0.205
Sales Growth*	-0.02	-0.082***	0.184***	0.084**	-0.119
Leverage*	0.076***	0.065***	0.005	0.027***	-0.030**
FTSE100	1.191***	0.693***	1.244***	1.189***	-0.586***
FTSE250	0.551***	0.346***	0.566***	0.540***	-0.220***
FTSE Small Cap	0.117***	0.050**	0.155***	-0.053***	0.196***
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.296	0.525	0.192	0.137	0.042
Number of Observations	4529	4496	3321	2522	2503

Table 5-7 The Effect of Female Directors on the Board.
This table presents the results of a Tobit regression on ln(total compensation) on both executives (excl. CEOs) and CEOs, conditional on the presence of one or more female directors on the board at (t-1). Model 1 is the standard Tobit; Model 2 also includes interactions between the variable Female and the performance variables (Return on Assets, Tobin's Q). The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Executives (excl. CEOs)		CEOs	
	(1)	(2)	(1)	(2)
	Coef.	Coef.	Coef.	Coef.
Constant	5.211***	5.061***	5.148***	5.162***
Female Presence				
Female	-0.109**	-0.097	0.202***	0.019***
Female * Return on Assets		0.011		0.018***
Female * Tobin's Q		-0.02		0.020***
Positions				
CEO	0.249***	0.251***	-0.055	-0.049
Finance Director	-0.026	-0.027		
Commercial Director	-0.223**	-0.199**		
COO	0.05	0.053		
Other Executives	-0.037	-0.037		
Director Characteristics				
Director Age	-0.016***	-0.016***	-0.004***	-0.004***
Director Tenure	0.001	0.001	-0.002	-0.002
Governance				
Boardsize	0.020***	0.020***	0.048***	0.048***
Non-Executive Directors (%)	0.010***	0.010***	0.009***	0.009***
Female Directors (%)	-0.002	-0.002	0.001	0.001
Audit Committee Presence				
Nomination Committee Presence	0.356***	0.353***	0.272***	0.276***
Remuneration Committee Presence	-0.011	-0.01	-0.196***	-0.196***
Top 4 Remun Consultant Advice	0.110***	0.112***	0.119***	0.115***
CEO/Chairman Duality			0.027	0.025
Firm Risk*	0.031	0.032	0	-0.007
Performance				
Return on Assets	0.010***	0.009***	0.012***	0.012***
Tobin's Q	0.008	0.008*	-0.002	-0.002
Ownership				
CEO Ownership	-0.002	-0.002	-0.014	-0.014
Executive Ownership (excl. CEO)	-0.001	-0.001	-0.008***	-0.008***
Non-Executive Ownership	-0.016***	-0.016***	-0.013***	-0.013***
Industrial Ownership	-0.003***	-0.003***	-0.002***	-0.002***
Pension Fund Ownership	-0.016**	-0.015**	-0.024	-0.024
Individual & Families Ownership	-0.006*	-0.006*	-0.007***	-0.007***
Institutional Ownership	-0.001	-0.001	0.001	0.001*
Firm Characteristics				
Free Cash Flow/Assets*	-0.408	-0.415	-0.273**	-0.328***
Sales Growth*	0.166***	0.166***	0.109**	0.095**
Leverage*	0.065***	0.064***	0.077***	0.078***
FTSE100	0.889***	0.888***	1.131***	1.133***
FTSE250	0.267***	0.267***	0.338***	0.337***
FTSE Small Cap	-0.027	-0.026	-0.046***	-0.048***
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.183	0.183	0.346	0.347
Number of Observations	3986	3986	1061	1061

Table 5-8 Industrial Segregation: Top 50% Male Industries.
This table presents the results of a Tobit regression on ln(total compensation) for both the executives (excl. CEOs) and the CEOs, including interaction terms between the variable Female and the Performance variables (Return on Assets, Tobin's Q). The analysis is restricted to those industries in which 50% of all males are employed. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Executives (excl. CEOs)		CEOs	
	(1)	(2)	(1)	(2)
	Coef.	Coef.	Coef.	Coef.
Constant	4.644***	4.646***	4.498***	4.896***
Female Presence				
Female	-0.067***	-0.016	0.074*	0.032
Female * Return on Assets		-0.006		0.000
Female * Tobin's Q		-0.011		0.011
Positions				
CEO	0.141***	0.142***	0.176	0.176
Finance Director	-0.082*	-0.081*		
Commercial Director	-0.300***	-0.298***		
COO	0.005	0.005		
Other Executives	-0.096	-0.096		
Director Characteristics				
Director Age	-0.011***	-0.011***	-0.002***	-0.003***
Director Tenure	0.005*	0.005*	0.002	0.002
Governance				
Boardsize	0.024***	0.024***	0.041***	0.041***
Non-Executive Directors (%)	0.009***	0.009***	0.009***	0.009***
Female Directors (%)	0.001	0.001	0.004***	0.004***
Audit Committee Presence	-0.521***	-0.522***	0.111***	0.110***
Nomination Committee Presence	0.200***	0.201***	0.214***	0.216***
Remuneration Committee Presence	-0.747***	-0.746***	-0.708***	-0.708***
Top 4 Remun Consultant Advice	0.100***	0.100***	0.148***	0.148***
CEO/Chairman Duality	-0.054*	-0.055*	0.06	0.061
Firm Risk	0.047**	0.048**	0.047***	0.047***
Performance				
Return on Assets	0.009***	0.009***	0.011***	0.011***
Tobin's Q	0.004	0.004	0.002	0.002
Ownership				
CEO Ownership	-0.003*	-0.003*	-0.009***	-0.009***
Executive Ownership (excl. CEO)	-0.002***	-0.002***	-0.001	-0.001
Non-Executive Ownership	-0.010***	-0.010***	-0.007***	-0.007***
Industrial Ownership	-0.001*	-0.001*	0.001	0.001
Pension Fund Ownership	-0.011***	-0.011***	-0.030***	-0.030***
Individual & Families Ownership	-0.003*	-0.003*	-0.005***	-0.005***
Institutional Ownership	0.000	0.000	0.002***	0.002***
Firm Characteristics				
Free Cash Flow/Assets*	-0.071	-0.072	-0.203	-0.207
Sales Growth*	0.074*	0.075*	0.016	0.016
Leverage*	0.055***	0.055***	0.055***	0.056***
FTSE100	0.970***	0.969***	1.133***	1.134***
FTSE250	0.512***	0.512***	0.588***	0.588***
FTSE Small Cap	0.083*	0.082*	0.099***	0.099***
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.199	0.199	0.315	0.315
Number of Observations	8158	8158	2367	2367

Table 5-9 Tobit on Corporate Governance Effects.
This table presents the results of a Tobit regression on ln(total compensation) on both executives (excl. CEOs) and CEOs, including interaction terms between female and the governance variables. Model 1 is the standard Tobit; Model 2 also includes interactions between the variable Female and the performance variables (Return on Assets, Tobin's Q). The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Executives (excl. CEOs)		CEOs	
	(1)	(2)	(1)	(2)
	Coef.	Coef.	Coef.	Coef.
Constant	4.503***	4.500***	2.731***	2.836***
Female Presence				
Female	0.788	0.826	1.147***	0.970***
Female * Return on Assets		-0.005		0.003***
Female * Tobin's Q		-0.011		0.040***
Female * Boardsize	-0.017**	-0.017**	-0.060***	-0.062***
Female * Non-executive (%)	-0.002	-0.002	-0.019***	-0.018***
Female * Female (%)	0.016***	0.017***	-0.002	-0.003***
Female * Audit Comm. Presence				
Female * Nomination Comm. Presence	0.135	0.160*	0.475***	0.519***
Female * Remuneration Comm. Presence	-1.068	-1.069		
Female * Top4 Remuneration Consultant	-0.119**	-0.116**	0.475***	0.501***
Female * Firmrisk	0.068	0.05	-0.244***	-0.227***
Positions				
CEO	0.082***	0.083***	0.181	0.181
Finance Director	-0.093***	-0.092***		
Commercial Director	-0.256***	-0.255***		
COO	-0.016	-0.016		
Other Executives	-0.183	-0.183		
Director Characteristics				
Director Age	-0.011***	-0.011***	-0.002	-0.003
Director Tenure	0.002	0.002	-0.001	-0.001
Governance				
Boardsize	0.028***	0.028***	0.053***	0.053***
Non-Executive Directors (%)	0.010***	0.010***	0.010***	0.010***
Female Directors (%)	0.001	0.001	0.003***	0.003***
Audit Committee Presence	-0.523***	-0.522***	0.008	0.01
Nomination Committee Presence	0.211***	0.211***	0.198***	0.199***
Remuneration Committee Presence	0.945	0.945	1.644	1.643
Top 4 Remun Consultant Advice	0.141***	0.140***	0.138***	0.138***
CEO/Chairman Duality	-0.012	-0.012	0.036**	0.036**
Firm Risk*	0.053***	0.054***	0.097***	0.096***
Performance				
Return on Assets	0.008***	0.008***	0.010***	0.010***
Tobin's Q	-0.002	-0.001	0.000	-0.001
Ownership				
CEO Ownership	-0.001	-0.001	-0.006**	-0.006**
Executive Ownership (excl. CEO)	-0.004***	-0.004***	-0.005***	-0.005***
Non-Executive Ownership	-0.012***	-0.012***	-0.007***	-0.007***
Industrial Ownership	-0.002***	-0.002***	0.000	0.000
Pension Fund Ownership	0.001	0.001	-0.009	-0.009
Individual & Families Ownership	-0.005***	-0.005***	-0.006***	-0.006***
Institutional Ownership	-0.001	-0.001	0.001	0.001
Firm Characteristics				
Free Cash Flow/Assets*	-0.260*	-0.259*	-0.195*	-0.198*
Sales Growth*	0.039***	0.039***	-0.023	-0.023
Leverage*	0.065***	0.065***	0.077***	0.077***
FTSE100	1.025***	1.024***	1.178***	1.179***
FTSE250	0.487***	0.487***	0.553***	0.553***
FTSE Small Cap	0.088***	0.088***	0.122***	0.121***
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.187	0.187	0.299	0.299
Number of Observations	15381	15381	4529	4529

Table 5-10 The Effect of Remuneration Consultants.

This table presents the results of a Tobit regression on ln(total compensation) for both executives (excl. CEOs) and CEOs, conditional on the presence of a Top 4 remuneration consultant. Panel A: Model 1 is the standard Tobit; Model 2 also includes interactions between the variable female and the performance variables. Panel B: Model 3 and Model 4 are similar to these models, respectively, but include interaction between the variable Female and position dummies. The significance of the results at the 10%, 5%, or 1% level is denoted with *, **, and ***, respectively. The data are extracted from Boardex, Datastream, and Manifest.

	Executives (excl. CEOs)		CEOs	
	(1)	(2)	(1)	(2)
	Coef.	Coef.	Coef.	Coef.
Constant	4.779***	4.772***	2.840***	2.849***
Female Presence				
Female	-0.118***	-0.075	-0.278***	-0.426***
Female * Return on Assets		-0.002		0.007***
Female * Tobin's Q		-0.014		0.029***
Female * Top 4 Remun Consultant	-0.119**	-0.116**	0.516***	0.539***
Positions				
CEO	0.084***	0.084***	0.178	0.178
Finance Director	-0.092***	-0.091***		
Commercial Director	-0.254***	-0.253***		
COO	-0.016	-0.016		
Other Executives	-0.183	-0.183		
Director Characteristics				
Director Age	-0.011***	-0.011***	-0.002	-0.002
Director Tenure	0.002	0.002	-0.001	-0.001
Governance				
Boardsize	0.027***	0.027***	0.050***	0.050***
Non-Executive Directors (%)	0.010***	0.010***	0.010***	0.010***
Female Directors (%)	0.002**	0.002**	0.003***	0.003***
Audit Committee Presence	-0.523***	-0.524***	0.011	0.012
Nomination Committee Presence	0.213***	0.214***	0.212***	0.214***
Remuneration Committee Presence	0.673	0.677	1.659	1.657
Top 4 Remun Consultant Advice	0.141***	0.141***	0.139***	0.139***
CEO/Chairman Duality	-0.011	-0.012	0.029*	0.030*
Firm Risk*	0.056***	0.056***	0.093***	0.092***
Performance				
Return on Assets	0.008***	0.008***	0.010***	0.010***
Tobin's Q	-0.002	-0.001	0.000	-0.001
Ownership				
CEO Ownership	-0.001	-0.001	-0.006**	-0.006**
Executive Ownership (excl. CEO)	-0.004***	-0.004***	-0.006***	-0.006***
Non-Executive Ownership	-0.012***	-0.012***	-0.007***	-0.007***
Industrial Ownership	-0.002***	-0.002***	0.000	0.000
Pension Fund Ownership	0.001	0.001	-0.009	-0.009
Individual & Families Ownership	-0.005***	-0.005***	-0.006***	-0.006***
Institutional Ownership	-0.001	-0.001	0.001	0.001
Firm Characteristics				
Free Cash Flow/Assets*	-0.257*	-0.256*	-0.225*	-0.227*
Sales Growth*	0.042***	0.042***	-0.018	-0.018
Leverage*	0.065***	0.065***	0.077***	0.078***
FTSE100	1.022***	1.021***	1.187***	1.188***
FTSE250	0.486***	0.486***	0.552***	0.552***
FTSE Small Cap	0.089***	0.089***	0.118***	0.117***
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Pseudo R-Squared	0.186	0.186	0.297	0.297
Number of Observations	15381	15381	4529	4529

Variable	Description and source
Panel A: Female Presence	
Female	A binary variable on the gender of the director. Female is coded as 1. Male is coded as zero. Source: *Boardex, Manifest.*
Panel B: Positions	
CEO	A dummy variable equal to one if a director holds the position of CEO. Source: *Boardex, Manifest*.
Executive Chairman	A dummy variable equal to one if a director holds the position of Executive Chairman. Source: *Boardex, Manifest.*
Finance Director	A dummy variable equal to one if a director holds the position of Finance Director. Source: *Boardex, Manifest*.
Commercial Director	A dummy variable equal to one if a director holds the position of Commercial Director. Source: *Boardex, Manifest*.
COO	A dummy variable equal to one if a director holds the position of COO. Source: *Boardex, Manifest*.
Other Executives	A dummy variable equal to one if a director does not hold the positions of CEO, Finance Director, Commercial Director, or COO. Source: *Boardex, Manifest*.
Panel C: Remuneration	
Total Compensation	Sum of all aspects of remuneration. Source: Own calculations based on *Boardex, Manifest*.
Base Salary	Fixed remuneration of executive director. Source: *Boardex, Manifest.*
Bonus	Remuneration based on performance; paid out annually. Source: *Boardex, Manifest*.
LT-Pay	Remuneration consisting of stock options and restricted shares. Source: Own calculations, *Boardex, Manifest.*
ST/LT-Pay	Remuneration calculated as sum of Base Salary and Bonus over LT-Pay. Source: *Boardex, Manifest*.
Panel D: Director Characteristics	
Director Age	The age of a director in number of years. Source: *Boardex, Manifest*
Director Tenure	The number of years a director serves in the current position. Source: *Boardex, Manifest*.
Panel E: Governance	
Boardsize	The number of directors on the board. Source: *Boardex, Manifest*
Non-executive directors	Non-executive directors serving on the board. Source: *Boardex, Manifest*
Female (%)	Percentage of Female Directors on the Board. Source: *Boardex, Manifest*.
Audit Comm. Presence	A dummy variable equal to one if an audit committee is present. Source: *Boardex, Manifest.*
Nomination Comm. Presence	A dummy variable equal to one if a nomination committee is present. Source: *Boardex, Manifest*.
Remuneration Comm. Presence	A dummy variable equal to one if a remuneration committee is present. Source: *Boardex, Manifest.*
Firm Risk*	The winsorized variance of cash flow per shares. Source: *Datastream*.

Top 4 Remuneration Consultant	A dummy variable equal to one if a remuneration consultant has advised the company that belongs to the top 4 remuneration consultants based on an overall count of client observations. Source: *Boardex, Manifest*.
CEO/Chairman Duality	A dummy variable equal to one if the chairman of the board also serves as CEO. Source: *Boardex, Manifest*.

Panel F: Performance

Return on Assets (in %)	Return on Assets. Source: *Datastream*
Tobin's Q	A variable calculated as market capitalization over stockholder equity. Source: *Datastream*.

Panel G: Ownership

CEO Ownership	The percentage of stock held by the CEO. Source: *Boardex, Manifest*.
Executive Ownership (excl. CEOs)	The percentage of stock held by the executive directors (excl. CEOs). Source: *Boardex, Manifest*.
Non-Executive Ownership	The percentage of stock held by the non-executive directors. Source: *Boardex, Manifest*.
Institutional Ownership	The percentage of stock held by financial institutions. Source: *Boardex, Manifest*.
Pension Fund Ownership	The percentage of stock held by pension fund. Source: *Boardex, Manifest*.
Individuals & Families Ownership	The percentage of stock held by individuals and families. Source: *Boardex, Manifest*.
Institutional Ownership	The percentage of stock held by financial institutions. Source: *Boardex, Manifest*.

Panel H: Firm Characteristics

Free Cash Flow / Assets	The value of free cash flow divided by assets. Source: *Boardex, Manifest*.
Sales Growth*	The value of total net sales divided by lagged net sales, winsorized. Source: *Boardex, Manifest*.
Leverage*	The value of debt divided by the value of equity, winsorized. Source: *Datastream*.
FTSE 100	A dummy variable equal to one if a company is member of the FTSE100. Source: *Boardex, Manifest*.
FTSE 250	A dummy variable equal to one if a company is member of the FTSE250. Source: *Boardex, Manifest*.
FTSE Small Cap	A dummy variable equal to one if a company is member of the FTSE Small Cap. Source: *Boardex, Manifest*.